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MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

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AERIAL
PHOTOGRAPHY

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VOL. LXXVIII No. 2031 [*Registered at the G.P.O. as a newspaper*] LONDON, MARCH 1, 1958 PRICE NINEPENCE

CURRENT TOPICS

The Cohen Report

ALTHOUGH condemned by trades union and Labour Party leaders, the first report of the Council on Prices, Productivity and Incomes, serving under the chairmanship of Lord Cohen, has one outstanding characteristic—it is uninhibited by party politics. It must therefore carry more weight and have greater influence on public opinion than many other documents of the kind prepared in recent years. Its cogency and lucidity are beyond question, and its findings—those of a Lord Justice of Appeal, a distinguished economist and a well-known chartered accountant—are in line with the impressions one had gained from an impartial and dispassionate study of the problems of inflation. For instance, endorsement of the Government's economic policy is qualified by the criticism that it should have been applied two years ago. In approving existing policies the report repels those of the T.U.C. and is against introduction or reintroduction of physical controls over investment, price controls, subsidies or legislation enforcing dividend limitation, or the repeal of the Rent Act. From the transport angle its most significant aspect is regarding wage demands, expressing the hope "that if any wage increases are granted in 1958 they should be substantially below the average of the last few years." In fact it deprecates a general rise in wages based solely on the increase in the index of retail prices, estimated at 4.6 per cent. It finds that "the habit of demanding large and frequent increases in monetary rewards grows by what it feeds on and may be found to persist after any technical justification for it in the state of the labour market has passed away." These are but some of the truths expressed in the report which, the council recognises, will cause some disappointment. But it believes the courses suggested are essential for the establishment of a stable £. "To achieve the desired result without industrial strife or unnecessary unemployment, trade union policy and leadership have a significant part to play." That indeed is the key requirement for the immediate future.

Tramway Abandonment in Germany

AT least ten West German public transport undertakings — Flensburg, Herne-Castrop-Rauxel, Iserlohn, Lübeck, Minden, Osnabrück, Pforzheim, Rheydt, Siegen and Solingen—have recently indicated that they are unwilling to continue tramway operation after 1960. Some are small; Herne-Castrop-Rauxel has only six cars. The Siegen system is really a light railway. The decision to convert these systems to bus or trolleybus operation is largely influenced by new legislation covering construction and use of tramcars after 1960. The new regulations will become effective almost at the same time as the drastically reduced dimensions and weights for p.s.v.'s announced earlier and they prohibit the use of wooden bodied trams. All motor cars will have to be equipped with electro-magnetic railbrakes and all windows must have safety glass. This would certainly mean new cars on most of the lines. Continuing its policy of tramway abandonment Solingen has now decided to close the last 8½-mile route to Vohwinkel. The service is to be taken over by trolleybuses and orders for eight new vehicles have already been placed. They will be of the Uerdingen-Henschel UH III type with petrol-driven auxiliary generator set. On delivery of these units Solingen will have the largest single trolleybus fleet in West Germany, comprising 54 vehicles, all of one make. In East Germany the town of Stassfurt discontinued its tram services a few weeks ago and introduced buses. There still remain, however, 31 East German tramway systems many of which are continuing to receive new rolling stock. Most of the new equipment is built by the Lowa Works in Werdau. Erfurt, which, as reported in MODERN TRANSPORT, had acquired five double-deck trolleybuses from Hamburg, has now rebuilt these three-axle vehicles into high-capacity single-deckers which are being operated with trailers on the town's two routes. It is reported on the other hand that Leipzig is becoming interested in double-deckers and has initially ordered 10 timber-framed vehicles of the bonneted East Berlin type. These buses (illustrated in our issue of August 31, 1957) were first built in May, 1955, and have 52 seats with a total passenger capacity of 70. By the end of 1957 about 90 vehicles of this design had been produced by the state-owned Waggonbau Bautzen. Unladen weight is now 10 tons 3 cwt., but metal bodies will be used in future.

Cooks Continental Timetable

FROM March, 1958, *Cooks Continental Timetable* includes a new section giving, in advance, the summer timetables for the named Continental expresses. Those who have planned a summer journey on the Continent by train will know the difficulty of finding out in advance what train services will apply from June to September. Too often, it is necessary to make plans long before the summer timetables are published, and every year travellers are taken unawares by changes in schedules or find (too late) that new trains have been introduced which would have saved them precious time. Travel agents are particularly well aware of the need for earlier publication of summer train services, since most of their tours are planned many months beforehand. To meet this need, the spring issues of *Cooks Continental Timetable* now include a feature available in no other railway timetable—a supplement giving a summary of the train services applicable during the summer on the main routes from the Channel ports. This supplement has already proved very popular with travellers and travel agents, but its 16 pages were not enough to cover all the routes required. The "advance information" section is now greatly extended, to include not only the services mentioned, but also all the named Continental express trains such as the Nord Express and the Simplon—Orient Express. These tables will be included in each monthly edition until the publication of the full summer timetable applicable from June 1. A few of the timings are still provisional, but necessary alterations will be incorporated later. Thos. Cook and Son, Limited, hopes that this new feature will smooth the traveller's path and enable him to make the best use of his travelling time; it should also guard against the annual change of Continental railway schedules which caused a recent travel writer to warn his readers to "Beware the First of June." The enlarged timetable is on sale at 8s. 6d. at Cooks offices from March 1.

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Basis for Good Public Relations

WHEN he addressed the Yorkshire Section of the Institute of Transport recently on "Transport Public Relations and Publicity," Mr. D. S. M. Barrie, chief public relations officer of the British Transport Commission, dealt in fact with the subject in rather wider terms while emphasising its importance to the transport industry. Nowadays appreciation of the need for good public relations was widespread among businesses both large and small and there were some essentials of policy and practice which, in his view, applied whatever the task in question on the method of approval adopted. The basis of the latter must be fundamentally honest and that was not merely on ethical grounds, but because the best public relations could not sell a dud article more than once. It was most desirable that all the methods of public relations and publicity used should be co-ordinated and controlled through one channel on behalf of the management and that public relations and publicity department should serve all other departments. The most important point of all was that p.r. policy must form part of that of the general management and whoever was immediately in charge of the work must be able to advise at that level. The extent to which public relations were decentralised should be the same as that to which the general management was so treated. If it was to be fully effective it must also be appreciated that public relations was a two-way process. The management which could show itself to be a good listener was going a long way towards establishing the mutual confidence with the consumer which was one of the main objectives.

The Electronic Computer in Perspective

AUTOMATIC data processing is a fine expression capable of capturing the imagination of many executives assailed by management and personnel problems, but the electronic computer is fitted for far better things than the saving of labour, or even drudgery. Thus said Mr. John Diebold, an American consultant, at a five-day course on the subject organised in London by the British Institute of Management. Labour saving, he said, could never be the principal justification of the computer; in the U.S.A. too many were acquired under that illusion and all too frequently it had proved false. Instead the equipment was used on tasks for which punched card or similar small-scale equipment would be adequate. The full capacity of these machines is not exploited while they are fed with fragmented information. A single computer can revolutionise industrial routine by coping with several problems at once, yet most are put to work on itemised jobs—payroll, invoicing, stock control, cost and financial accounting—as though we were still in the world of departmentalised clerical labour—a world which even the punched card tabulating room had failed to disturb. Now it was for management to undertake the task of reviewing all activities which involved data processing and to see how those fundamental problems could be co-ordinated before being fed into the computer. Putting this kind of automation to work meant more creative organisation by management and better training of personnel. Ultimately technical colleges would have to turn out young people trained not merely (as at present) to use the equipment but to understand the demands made by it.

Problems in Czechoslovakia

REPORTS from Prague indicate that difficulties and shortages are being suffered by the Czechoslovak transport system. Last year, stated a Prague Radio commentary, it was only with the utmost effort that the railways met the demands for freight haulage. Nearly a million tons of coal were lost because of wagon shortages and goods are stated to have piled up in factories awaiting transport. While inefficient railway management is blamed, at many factories wagons were held on demurrage. Pilfering of passenger train fittings is rife. In the Brno division light bulbs, clothes hooks, ashtrays, switches, curtains, straps, pictures and even hand basins, fire extinguishers and radiators were stolen from trains, much of the property being brazenly dismantled in full view of other passengers! Public transport in the capital, Prague, is suffering from a shortage of spares, according to *Lidova Demokracie*. Last year the tram undertaking needed nearly 1½ million crowns' worth and received replacements only to the value of 350,000 crowns. Only one-third of the 1958 requirements are expected. The excuse made by the manufacturers concerned is preoccupation with making new equipment for export. A similar report from the Rumanian capital of Bucharest states that hundreds of trams have been out of service there because of the impossibility of obtaining spares, ranging from motors to bulbs.

Training in Engineering

FOUR of its former students play the principal parts in the film "Chelsea College" which has been made to spread literally abroad the work of the Chelsea College of Aeronautical and Automobile Engineering. Founded in 1924 to provide the motor industry with men qualified technically but able also by reason of their character and ability to take up executive posts, the college subsequently opened an aeronautical engineering department (1931) and then, in 1950, another for agricultural students. For many years its facilities have been widely appreciated in foreign countries and many of its students have come with the encouragement of their respective governments. At the present time about a quarter of the 401 attending courses comes from Britain, about a third from the Commonwealth and the remainder from other countries. The film, which runs for ten minutes, wastes no time in indicating the scope of the work done and its showing abroad should spread still further the knowledge of what is available and indicate the live approach of the college to its work. It has never been content just to leave things to continue unchanged for the sake of saving trouble and the new principal, Mr. J. A. C. Williams, is well aware of the need to keep abreast, or, if possible, ahead of current thought. It is thought that the establishment is the only one of its type in Europe to be conducted by private enterprise. Its achievements have been considerable and its future is certainly promising.

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BRITISH RAILWAYS

MODERN TRANSPORT

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

Transport in the Free Trade Area

NOT the least important outcome of Mr. Macmillan's Commonwealth tour was an expression by Mr. Menzies, Prime Minister of Australia, of that country's full agreement with Britain's proposals for the European free trade area. As explained in our January 11 issue, the E.F.T.A. will be associated with the European Common Market, inaugurated on January 1 and designed to secure the abolition of tariffs between the six countries concerned within a 12-15 year period; it also contemplates revolutionary changes in the structure and inter-relationship of European transport, which is largely Government-controlled. Experience shows that the transport policy of a country, particularly its charging arrangements and the enforcement of restrictive practices, can be used by Governments, administrations and other authorities to give specially favoured treatment to particular undertakings, industries or geographical areas. Furthermore, with few exceptions, railways are in deficit and are apt to receive Government support, either direct or indirect. As pointed out in a joint report on the E.F.T.A., prepared by the Association of British Chambers of Commerce, Federation of British Industries and National Union of Manufacturers, it is difficult to determine the extent to which manipulation and discrimination in transport might unbalance fair competition in the free trade area, but these measures should be guarded against. Indeed, they justify insertion of protective clauses in the E.F.T.A. convention. Many of the transport principles enunciated by these prominent trade associations have already gained fairly widespread recognition through the efforts of the International Chamber of Commerce, whose actions they commend.

No Discrimination

THEY urge that transport should not be used by any Government or administration as an instrument of discrimination by the enforcement of low transport charges so as, for instance, to give special treatment to export goods or to form hidden subsidies to a particular undertaking, industry or geographical area. Charges should be related broadly to the cost of performing the service, and enforcement of similar charges on different methods of transport, irrespective of cost, as a principle should not be permitted. The report notes that European railways, our own included, are now inclined to move away from the ad valorem basis of charging, which cannot stand up to road competition, and it states that this tendency should be encouraged. For apart from the desirability of aligning the principles of charging in order to enable traffic to use the most economic and most favourable form of transport, assessment on a cost basis should help to avoid the granting of unremunerative rates for export traffic. No form of transport, therefore, should be required by Governments or other authorities to provide services below cost. All types of transport should be placed, as far as practicable, on an equal footing by the revision of certain statutory obligations and by allowing freedom to providers of transport to compete and to users to choose their service and operate private transport for their own goods. It is argued that frontier transit tariffs should be reasonable, should be based on cost and not used as a form of tax or customs duty. Moreover, there should be no regulations hindering the free movement of goods.

The E.F.T.A. Convention

GREAT importance is attached to the need for formulating and implementing common rules and regulations for international road transport and the standardisation of vehicle weights and dimensions. The report points out that certain aspects of international transport, for example transport policy, free movement of goods, avoidance of discrimination and frontier transit tariffs, are already covered by articles in the Rome Treaty but nevertheless should also be considered in connection with the E.F.T.A. Convention. It stresses the need for cheap and efficient transport to encourage the progressive and considerable expansion of trade in both directions between the United Kingdom and Europe, following this country's participation in the E.F.T.A. "The crossing of the Channel," it states, "must cause some additional cost, but it is of course reciprocal, although the European market for the U.K. may be larger than the U.K. is for European countries. It has not been possible to get figures of comparative costs for similar goods dispatched to Continental destinations from the U.K. and from an interior Continental point the distance of which is comparable, but the U.K. must be at some disadvantage owing to the Channel crossing. The Channel tunnel project is being investigated; and we consider that the improvement and development of conventional methods of crossing the Channel would repay thorough and urgent study: interchange of rolling stock must be developed to achieve satisfactory results."

I.C.C. Points The Way

THE report includes an extract from a statement by the International Chamber of Commerce reiterating principles which, as already reported in these columns, have in large measure been confirmed by the European Conference of Ministers of Transport; they embody freedom of choice and freedom of transport for own account. The I.C.C. reiterates its objection to concessionary transport charges as a means of subsidising producers and other consignors, this being inconsistent with the principle of relating charges to costs. It urges a "thorough survey of the requirements of capital investment by each form of transport" to determine what each should receive consistent with its potentialities and inherent advantages, a course which has so far been neglected in this country. In deprecating, for reasons now obvious, artificial support of any one form of transport by direct subsidy or taxation and restriction on other forms, the I.C.C. recommends examination, with a view to elimination or modification, of existing obligations on railways. It also proposes the establishment of a programme of long-distance railway, road and inland waterway routes and the adaptation of large exchange points for transhipment of goods from less suitable to more appropriate means of transport. Modernisation of track and equipment, it states, "constitutes for European exchange a more important problem than that of customs tariffs." There is little doubt that the establishment of a European common market and free trade area will encourage a new and economic deployment of transport resources to the benefit of all the countries concerned, and the users are to be commended for pointing the way.

Forthcoming Events

March 3.—Institute of Transport (East Anglia). Annual dinner and visit of president. At Purdy's Restaurant, Norwich. 7 p.m.
Institute of Transport (Darlington). Paper by Mr. B. T. Pratt, "Transport Finance and Accounts." At United House, Grange Road, Darlington. 7 p.m.
Institute of Transport (Metropolitan). Paper by Mr. L. B. Alexander, "Modern Rolling Stock." At 80 Portland Place, W.1. 6 p.m.
Institute of Transport (Sheffield). Paper by Major-General G. N. Russell, "Transport in Modern Times." At Royal Victoria Hotel, Sheffield. 6.30 p.m..
Permanent Way Institution (Leeds and Bradford). Paper by Mr. A. C. Layhe, "Further Developments in Civil Engineering Plant." At Social and Recreation Club, Ellis Court, Leeds City Station. 7 p.m.

March 4.—Institute of Transport (Irish). Paper by Mr. E. W. Arkle, "Railway Salesmanship." At C.I.E. Club, Earl Place, Dublin. 6.15 p.m
Institute of Transport (North Western). Paper by Mr. D. O. Manning, "Commercial Aspects of Short Haul Air Transport." At Town Hall Annexe, Manchester. 6.15 p.m.
Institute of Transport (Western). Annual dinner and visit of president. At Royal Hotel, Bristol. 7.30 p.m.
Institute of Road Transport Engineers (Eastern). Paper by Mr. J. H. Alden, "Road and Rig Testing of Prototype Road Transport Vehicles and their Components." At Canteen, Eastern Counties Omnibus Co., Limited, Norwich. 7 p.m.
B.R. (Western Region). London Lecture and Debating Society. Debate with South Wales and Mon. Railways and Docks Lecture and Debating society. At Angel Hotel, Cardiff. 6.30 p.m.

March 5.—Institute of Transport. Joint meeting with Societé des Ingénieurs Civils de France (British). Paper by M. Pierre Weil, "The Latest Developments and Future Prospects of the S.N.C.F." At 80 Portland Place, W.1. 5.30 p.m
Institution of Railway Signal Engineers (York). Paper by Mr. P. W. Hanstock, "Developments in Telecommunications in Relation to the Modernisation and Electrification Programme." At Signalling School, Toft Green, York. 5.30 p.m.

March 6.—Institute of Transport (Merseyside). Paper by Mr. E. W. Arkle, "Railway Management." At Chamber of Commerce, Liverpool. 6.30 p.m.
British Institution of Radio Engineers. Paper by Mr. J. M. Howe, "Radar Speed Control in Railway Marshalling Yards." At Reynolds Hall, College of Technology, Sackville Street, Manchester, 1. 6.30 p.m.
Institute of Road Transport Engineers (Western). Paper by Mr J. G. Giles, "The Work of the Motor Industry Research Association." At Royal Hotel, Bristol. 7 p.m.
B.R. (Western Region). London Lecture and Debating Society. Paper by Mr. K. G. Kenrick, "Work Study." At H.Q. Staff Dining Club, Bishops Bridge Road, W.2. 5.45 p.m.

March 7.—Institution of Locomotive Engineers. Annual luncheon. At Dorchester Hotel, Park Lane, W.1.
Railway Club. Paper by Mr. T. S. Lascelles, "Some Features of Continental Signalling Installations." At 320 High Holborn, W.C.1. 7 p.m.

AERIAL PHOTOGRAPHY

An Aid to Railway Civil Engineering

PRACTICE ON THE SOUTHERN REGION

AERIAL photography has of recent years become one of the most important aids to the civil engineer. Its development has been of slow growth until the stimulation of its use by the Royal Engineers and the Royal Air Force during the recent war; it may not be generally known that its potentialities were realised almost at the beginning of the photographic era and in 1858 mapping from balloons was carried out in France. By 1890 ground photogrammetry was used to prepare plans for the Jungfrau Railway by using neighbouring mountains to gain the necessary height.

Quick, Cheap, Reliable

In many cases today aerial surveys are accepted as a quick and reliable method of achieving the up-to-date plans which must always be the basis of all civil engineering projects. The cost is reasonable, time is saved and it enables large-scale plans, such as 1/480 (40 ft. to 1 in.), to be prepared where the largest scale of the Ordnance Survey maps is 1/1,250 (104 ft. to 1 in.). It has proved its worth to many departments of British Railways.

A paper presented to the Institution of Civil Engineers jointly by Mr. N. E. V. Viner-Brady, O.B.E., and Mr. H. M. Pearson, B.Sc.(Eng.), respectively new works engineer and assistant (special purposes), chief civil engineer's department, Southern Region, British Railways, gave a timely review of the increasing use of aerial photography by the regions of British Railways. It is appropriate that this paper should have been compiled by Southern Region men, as the Southern Railway led the way in pioneering the development of large-scale surveys, the application of which to various forms of railway activity is being greatly extended.

Although, apart from an L.M.S. estate survey from Manchester to Bury and Liverpool in 1936, little was done before the last war, the Southern Railway was first in the postwar field in 1946 with a contoured aerial survey of Folkestone Warren. This small-scale survey (104 ft. to 1 in.) was considered at that time to be the limit to which mapping accuracy could be reached. In view of the encouraging results obtained, the Southern whole sections of the railway from 5 to 50 miles in length. It enabled the Region to reintroduce folding book plans of the line and adjoining property to a small scale of 104 ft. to 1 in. Although Ordnance Survey maps are made to this scale, they exist only for large towns. On the Southern only 6 per cent of the total mileage, outside the London area, is covered by 1/1,250 scale ordnance survey maps.

In April, 1955, a further appraisal of the experience gained led to a proposal to have large areas of the Southern Region photographed only. The intention was to be in a position to produce either large- or small-scale surveys wherever they might suddenly be needed. Unfortunately it proved to be impracticable from a policy angle. It would have meant that the successful contractor could have been able to exploit his position at the expense of the railway. None of the contracts was, in fact, actually placed.

New Techniques

Later in the same year 40-ft. surveys were urgently required at Victoria and Waterloo in connection with modernisation schemes. In both cases the track was drawn on in pencil as the whole layout was to be redesigned. This method enables the surveys to be brought up to date when the work is completed.

The year 1955 saw several other technical developments. One such advance enabled the hitherto accepted practice of premarking to be omitted. On several occasions, owing to bad weather, the white paint had to be renewed at considerable cost. Premarking is now seldom used. It was in this year also that the 150-year-old custom of plotting surveys on mounted Whatman paper was finally given up. It is now standard practice for all aerial surveys to be drawn on the new transparent plastic medium known as Astrafoil. The main advantage is that it is stable at normal temperatures and negatives and prints can readily be taken from it.

Altogether the Southern Region has had 450 route-miles of 104 ft. to 1 in. strip surveys made and 86 large stations and yards surveyed to 40-ft. scale by aerial means. The knowledge that the Southern Region had experimented extensively with various methods of air surveys with the five companies specialising in this class of work inspired experiments on the other regions. Both the Western and the Eastern had undertaken some aerial surveys with Hunting Aerosurveys, the original pioneers of the 40-ft. railway station surveys of the Southern Region.

Comparison with Ground Surveys

Aerial surveying has proved to be just as accurate as ground surveying. Its main advantage, however, lies in the speed with which a survey of this nature can be undertaken. After 11 years of various types of surveying experience it has been found that air survey costs compare favourably with ground surveys. Over large and complex track layouts and junctions where ground surveyors would be subject to continual interruption aerial methods have an undoubted advantage. The heights of various features can be assessed with great accuracy, even though the minimum flying height for photographic aircraft is specified as 1,000 ft., so that considerable reliance is placed on the precision of the camera lens.

Further improvements and new developments are still being investigated by the Southern Region. It is hoped in the near future to introduce new techniques which will give even more precision and detail at the same cost and time as at present. In all these experiments the iniative has always to be taken by the railway, as the air survey companies cannot envisage the diverse requirements in survey and reproduction needs of a railway undertaking.

Aerial photography is by no means confined to surveying. The stereoscopic examination of the survey photographs can prove invaluable for determining the effect of site features on proposed new works or projects. Under a stereoscopic viewer there is some slight exaggeration of vertical height. This enables the effect of natural features on proposed schemes to be accurately assessed. Thus the need for a preliminary site visit is often avoided. Such views are invaluable at bridge reconstruction sites, particularly those not readily accessible from head office. On the legal side aerial photographs, preferably oblique views, are frequently far more helpful than engineering drawings which often are not readily understood by lay persons. Such photographs have even been taken to Parliament to support contested features of Parliamentary Bills —and with marked success.

In other directions the estate surveyor finds the overall photographic record of a district most helpful in determining land values. These cannot be obtained from a map or plan. In the record department they are used for ascertaining the nature and existence of footpaths and rights of way as existing at the time of photography. A new use of aerial photographs was developed during 1957 by the chief solicitor, who has discovered their help in referencing lands for Parliamentary Bills without having necessarily to visit each site. The operating departments have been able to utilise the process for traffic counts in large yards and bottlenecks.

Progress of Works

From an engineering viewpoint the precise photographic recording of a site before any new work is begun can prove invaluable at a later stage. This is particularly so if any contention should arise, on completion of the work, as to the nature of features existing beforehand. Such views are naturally most comprehensive when taken from the air. Moreover they can also prove of importance in showing the nature and state of land. This occurs when the use is changed, sometimes intentionally so for the purpose of gain when its acquisition becomes necessary.

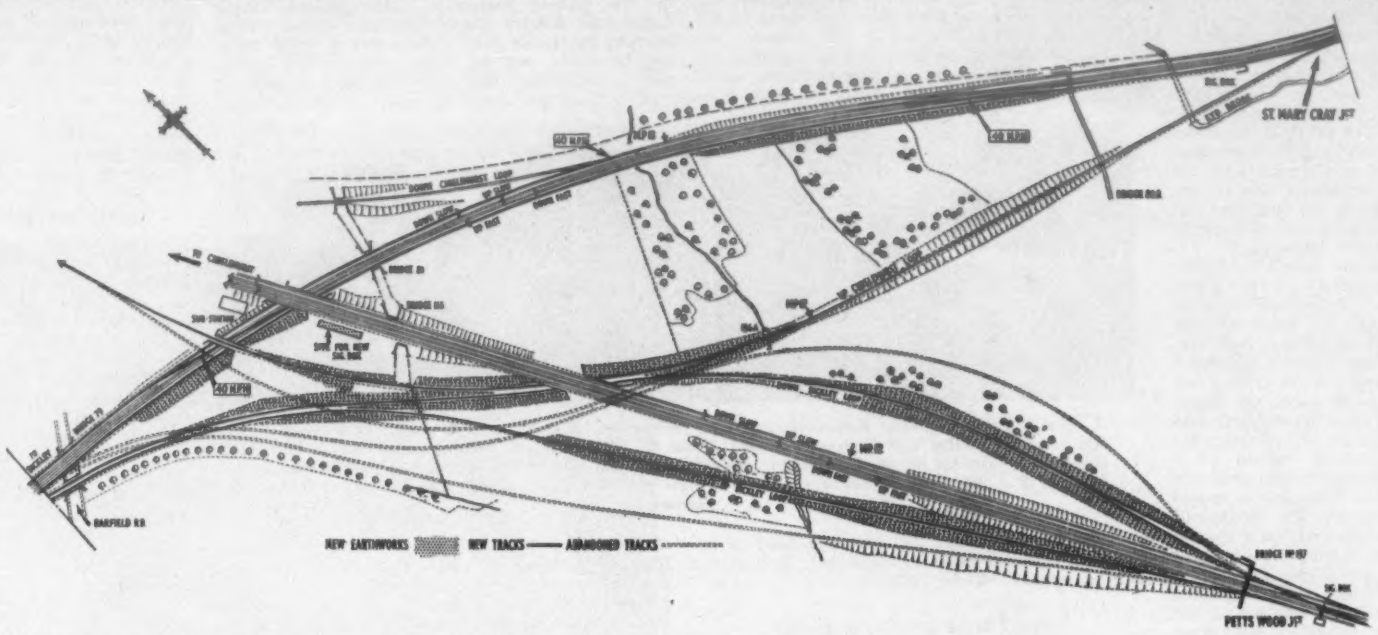
For works in progress over a long period of time aerial photographs are far more useful than those taken from the ground. They record the overall picture which can then be more readily compared with a drawing. The effects of perspective are avoided and even large oblique views show the whole of the work no matter how large the area involved—such as new marshalling yards, line widening and so on. Such views are taken at regular intervals, monthly or three-monthly, and are useful to portray the progress of work to members of area boards.

Aerial photography is being resorted to more frequently in railway engineering for preliminary investigation for new works. Considerable use has been made of it for planning new lines, marshalling yards and overhead electrification schemes. The latter involve substation sites, overhead gantries, cable routes and so on. Site features can be seen and appreciated under stereoscopic viewing far more readily than from a drawing.

Sea and Estuary Works

There are several hundred miles of track alongside the sea or estuaries where coastal defences are a matter of vital importance. Here aerial photography comes into its own and shows the nature of wave formation, beach regime and under-currents in a way that is completely beyond the reach of ground methods. In harbours or estuarial channels aerial surveying can accomplish what is virtually impossible to ground surveyors over muddy flats or marshes. It is invaluable in drawing clearly the location of sandy banks, submerged channels or mud flats in places of difficult access with only short exposure at low tides.

While ground survey work will obviously continue to have its uses it is unquestionable that aerial surveys will play an ever-greater part as an aid to civil engineering work and indeed to other departments of the railways, and we are much indebted to Mr. F. E. Campion, chief civil engineer, Southern Region, British Railways, and to his officers for an opportunity to investigate the work of his department in this connection and to reproduce photographs of features produced from the air. One of the photographs, of the work going on in the Bickley—Chislehurst area in widening the former London Chatham and Dover main line and altering the burrowing junctions between Bickley and Petts Wood for higher speeds (see MODERN TRANSPORT of November 30, 1957).



Alterations to the track layout in the Bickley—Chislehurst loops, Southern Region, shown on a diagram prepared from an aerial survey

Uncontrolled mosaic of Bembridge Harbour entrance produced for the Southern Region from aerial photographs by Meridian Airmaps, Limited

Aerial photograph of the Bickley—Chislehurst loops, Southern Region

initiated discussions with Hunting Aerosurvey Company as to the possibility of undertaking a survey to a much larger scale, i.e. 40 ft. to 1 in. It is the surveying of railway property to this scale that forms the main task of railway surveys.

Development

Accordingly a trial survey was made in the following year at Bournemouth. The result was encouraging, but obviously needed more forethought and study. Both the air survey concern and the railway felt that technical adjustments, with closer liaison on the ground, would justify further efforts. Therefore in 1949, when the Southern Region was faced with the need for a survey of a widening scheme of some magnitude in a closely built-up area, a fresh contract was let. New techniques and a closer liaison between the railway and the air survey company led to a deeper appreciation on both sides of the problems involved. This survey of the South Croydon area was completely successful.

The results achieved justified optimism in the Region in feeling that the basic problem of producing 40 ft. to an inch surveys quickly, had been solved. The situation had indeed become very acute owing to loss of Southern plans through war damage and to lack of up-to-date surveys, due to the war, and shortage of experienced staff to undertake their preparation. The chief reason for the success obtained was the method of premarking site features with white paint. This enabled the cameras then in use to photograph such details with precision.

Strip Survey

Between 1949 and 1952 five additional large-scale aerial surveys were undertaken. In the latter year what is now called a strip survey was made. This consists of a survey at 104 ft. to 1 in. of

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Stability tests carried out on its existing FL range of fork-lift trucks have been used to good account by Ransomes, Sims and Jefferies, Limited, in the design of a new NR20, a 2,000-lb. battery-electric model developed from the FL2000. The NR20, says the manufacturer, is an accurate reflection of the benefits to be gained from an internationally recognised system of testing. While carrying capacity remains the same performance is considerably improved due to the reduced turning circle, and there is a marked reduction not only in weight and size, but also in the all-important matter of cost. It will transport and stack loads of up to 2,000 lb. at a load centre of 24 in., and up to 2,240 lb. at 20 in. The lift can vary as required from 96 in. to 168 in.

LORRY—BUS—COACH

Changed User Maxim Reiterated

FAILURE of an A-licence holder to use the vehicles specified therein in accordance with the terms of the normal user declaration empowers the licensing authority to refuse renewal of the licence. The Transport Tribunal has thus underlined its decision in the Williams appeal (MODERN TRANSPORT, November 26, 1955) in its judgment on an appeal by C. Knight and Sons, Limited, Hanley, against the refusal of the West Midland area Licensing Authority to renew A-licences in respect of three vehicles. The Tribunal says that, while on the facts the present appeal is distinguishable from Williams' inasmuch as the latter concerned additional vehicles to enable the applicant to resume work for which he had previously been licensed, the principle is the same.

The normal user declaration is to be regarded as of capital importance by a licensing authority since (*a*) the details of districts in which, or places between which, the vehicles will normally be used determines the class of objectors whom he is bound to consider under section 11(2) of the Road and Rail Traffic Act, 1933, and (*b*) it determines the scope of his examination of the merits of the application. If a licensing authority enables an applicant to do what he seeks to do, and then the applicant is free to do something else, the whole proceeding is negatory, says the decision.

The matter is put beyond reasonable doubt by the requirement that regard must be had (section 6(2)) to the previous conduct of the applicant as a carrier of goods. To change the facilities provided by the vehicles is obviously relevant. Chiefly, there is the "compulsive authority" offered in the House of Lords decision arising out of *R. v. West Midland Licensing Authority* (1935, 1K.B. 454 and 457), where Lords Blanesburgh and Maugham made it plain that departure from the normal user declaration justified refusal of a renewal application. It was admitted in evidence by the appellant company in the present appeal that vehicles licensed variously for household removals and certain other traffics within a 25-mile radius had been used almost exclusively on other work prior to the renewal applications in October, 1956. It was submitted on behalf of the appellant that the facilities which were the subject of the original grant were being provided by other vehicles. The Tribunal says that, if it wished to regularise its activities, the company should have sought a new licence declaring the new user, offering to surrender the old licence if the new one were granted. It is incorrect to assume that there is no way to regularise changed activities during the currency of a licence.

A-Licence Revoked

ANNOUNCING his decision to revoke an A-licence because a declaration of intended normal user had not been fulfilled, Mr. Alex. Robertson, deputy Scottish area Licensing Authority, said in Aberdeen last week that some operators felt that a declaration of normal user for the purpose of securing a licence was of little consequence. He did not want an operator to think he must be tied 100 per cent to the declared normal user; he might wish to make a periodic change but it must be only a periodical occasion. Mr. R. Yule and Sons, of Dyce, Aberdeen, had stated a normal user to cover general carriage between Aberdeen, Dyce, Parkhill, Fintry and Keith Hall, but an examination of the vehicle records showed that the vehicle had operated almost exclusively on traffic between Aberdeen to Glasgow, Edinburgh, Carlisle, Newcastle, Doncaster, Gateshead and Nottingham. Mr. D. Yule agreed that he had been transporting paper to the south because of the decreased need for local daily carrier services since so many firms carried their own goods. The licensing authority ruled that the breach was a gross one although probably not deliberate and revoked the licence as from March 1. This licence, in respect of one vehicle, was renewed last November; following an examination of records in January the licensing authority called the holder before a public inquiry to show cause why the licence should not be suspended or revoked for breaches of the normal user. It is stated that an appeal will be lodged.

Radius Restriction on Opencast Haulage

DURING proceedings in the Northern area traffic court recently, Mr. J. A. T. Hanlon, the licensing authority, indicated that he intended to tighten up licence conditions applied to the transport of coal from opencast sites. At present, he stated, licence conditions were such that it was possible to pick up coal at opencast mining sites in the area and carry it anywhere, but it was his intention to confine hauliers' activities to the Northern traffic area. Mr. J. L. R. Croft, representing British Road Services, said that a submission prepared for the licensing authority might point to the desirability of even more extensive amendment of the wording of licences.

Los Angeles Fleet

FROM Monday next, March 3, the Los Angeles Metropolitan Transit Authority (MODERN TRANSPORT, February 22) will take over 1,692 buses, 109 trolleybuses and 313 rail vehicles, operating 2,647 miles of route. Los Angeles Transit Lines (a merger of the former L.A. Railway Corporation and L.A. Motor Coach Company) contributes 834 buses, 109 trolleybuses and 235 tramcars working 1,287 route-miles in the Greater Los Angeles area. The company is controlled by National City Lines, Inc., the Chicago concern which owns and operates transit systems in 14 States. The president of L.A.T.L. is Mr. Cone T. Bass, elected only last month to succeed Mr. E. C. Houghton who has gone to Chicago as president of the parent company. Metropolitan Coach Lines and Asbury Rapid Transit System jointly operate 748 buses over 1,300 miles of route, serving 66 cities and 69 other communities spread over a wide area. Metro also operates 78 railcars, with a track mileage of 60, relics of the day when the system was operated by the Pacific Electric Railway Company. These cars are of main-line size, with six steps up from street level, and run between Los Angeles and Long Beach and San Pedro. The president of both companies is Mr. Jesse L. Haugh, who is also president of the American Transit Association.

A 70-seat Dennis Loline double-decker with Willowbrook body and Gardner 6LW engine, operated by Tailby and George, Limited (Blue Bus Service), of Willington, Derbys; right, old and new Bristol single-deckers, the chassis of the left-hand bus, although rebodied, dating from 1929. This Bath Tramways vehicle is now a L5G-type 45-seater rebuilt from a B-type chassis

New Front Ends on Buses

GLASS fibre front ends are being fitted to ex-London Transport Guy Arab buses bought by Edinburgh Transport Department some years ago, to bring them into line with other modern Edinburgh buses. According to transport officials these buses, which were fitted with new Duple bodies, will be good for another seven years at least.

Separate Flashing Indicators

AS foreshadowed in a recent statement in the House of Commons, the Minister of Transport is now circulating interested organisations for their comments on new proposals about the permitted colour of vehicle direction indicators, the separation of indicators from other lights and the intensity and angles of visibility of the signals given. It is proposed that in the case of motor vehicles registered for the first time on or after January 1, 1959, the colour of all direction indicators should be amber and that the illuminated area displaying a flashing direction indicator signal should not be used for the display of any other light or signal. In other words, the illuminated area showing the direction indicator signal must be in a separate housing, or if in the same housing as any obligatory front lamp, rear lamp or stop lamp must be internally separated and shielded. The number and range of visibility of flashing indicators is also laid down in the proposed regulations.

Goods in a Minibus

OBJECTION raised by the Norwich registration authority to the licensing of a Minibus 12-seat vehicle at the private rate is being taken up by T.R.T.A. It was reported to the Association that the authority agreed to accept taxation on that basis only if an undertaking was signed to the effect that "business goods would not be carried." The T.R.T.A. points out that business goods can be carried in this class of vehicle as in an ordinary private car.

Another Limited-Stop Interurban Service

SUBJECT to approval by the Yorkshire area traffic Commissioners, West Yorkshire Road Car Co., Limited, intends to introduce a new peak-hour semi-express bus service between Bradford and Keighley in order to give through passengers a quicker journey, and also new through return fare Sunday service enabling passengers from Bradford and Leeds to visit places such as Ilkley and Harrogate during the day on one ticket. The new Bradford—Keighley service, operating at half-hourly intervals, will stop intermediately only at Crossflatts, Bingley and Saltaire.

Delivery Vehicles Earn Priority

COMMERCIAL vehicle drivers wishing to load and unload outside shops should have priority over private motorists wanting to park, said the Chief Constable of Ipswich (Mr. James Crawford) at a meeting in Ipswich of the Eastern area of the Traders' Road Transport Association. Mr. Crawford said the issue appeared to be between shops without any goods in and shoppers unable to get at the goods. He added: "It seems to me the right thing to do is to provide for the shopkeeper to get his goods into the shop so that he can sell and leave the shopper to make his own arrangements for getting to the shop. The first essential is to get the goods into the shop and where necessary an order has to be made banning parking and allowing the commercial vehicle to get through with the goods."

Bus and Coach Developments

Maidstone and District Motor Services, Limited, proposes an express service on high summer Saturdays between Leyton and Sheerness via Newbury Park, Seven Kings, Chadwell Heath, Rainham, Grays and the Tilbury—Gravesend ferry.

Mrs. E. Lidgey, Tregony, seeks the excursions and tours from Grampound Road of G. S. James.

Derby Corporation and Trent Motor Traction Co., Limited, propose a new joint service between Derby (Bus Station) and Breadsall (Horncastle Road) via Nottingham Road, Mansfield Road and Scarborough Rise.

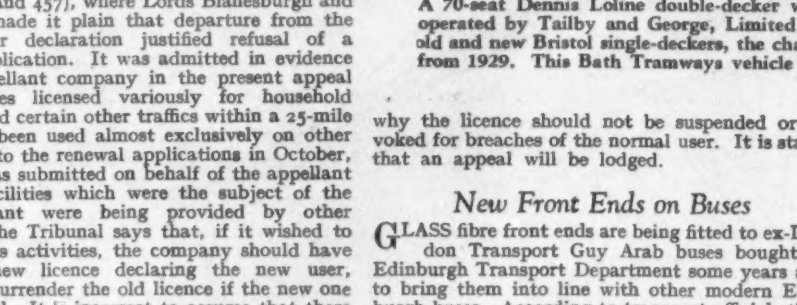
Sheffield Corporation proposes bus services from Elm Tree to Fitzalan Square and to Sheffield Lane Top to replace existing tram services.

Glasgow Corporation seeks Langside—Anniesland and Springburn—Shieldhall or Linthouse bus services to replace respectively existing tram routes 24 and 27.

From March 5 London Transport Country bus routes 314A, 314B and a 334A journey will be extended from Warners End to Gadebridge in Hemel Hempstead New Town via Galley Hill and Howards Drive.

As a consequence of sales of older buses in its fleet, London Transport is now bringing into service 63 unused Leyland RTL-class double-deckers and 40 or more out of 58 A.E.C. RT-class buses which have also been in store. These buses were delivered in 1954 but by then had become surplus to requirements owing to unforeseen changes in the traffic pattern. The A.E.C. buses are in the green Country area livery and will go on to those services.

LIQUID IN BULK?



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Flexitor Suspension and Four-Wheel Drive

FOR ¼-TON LOADS ON ROAD OR ACROSS COUNTRY

FORESHADOWED in a leading article in our issue for August 24, 1957, a new general-purpose vehicle designed for road and cross-country operation with 10-12 cwt. payloads is introduced this week by the Austin Motor Co., Limited. Notable features of the design are independent suspension of all wheels, giving an exceptionally stable ride and improved wheel adhesion over poor surfaces, four-wheel drive and alternative B.M.C. petrol or diesel engines. These features, together with a 23½ cu. ft. load space, full weather protection for crew and load when desired and the ability to operate as an open truck, make it suitable for use wherever the going is rough, such as on farms and constructional sites and in oilfields and undeveloped areas.

Departure from Convention

Most notable departure from convention in the Gipsy is the use of the Flexitor rubber suspension unit developed by George Spencer, Moulton and Co., Limited—a member of the Avon group of companies—in a trailing-arm arrangement for all wheels. The Flexitor unit comprises basically a hollow steel shaft bonded inside a sleeve of rubber which itself is encased in a steel shell. The outer casing is attached to the chassis—in the case of the Gipsy, the front two units are moulded in a common casing, the casing forming a strong chassis-frame crossmember—and a flange at the outer end of the shaft carries the trailing arm and hub assembly for the road wheel. Road-wheel deflection subjects the rubber to torsional shear.

The unit is designed to give the required torsional flexibility for any given application and radial precompression of the rubber sleeve during fabrication provides improved fatigue life of the rubber as well as the necessary stiffness to resist axial, radial and tilting modes of loading, giving accurate alignment of the road wheels under all conditions without the need for additional linkage or support. Apart from the obvious advantage of the reduction of unsprung weight in a fully independent suspension, in that the conventional shaft lever type at the front. The self-damping of the Flexitor unit does however reduce the work of the dampers, which have been found to have a longer than normal life. As developed for the Gipsy, carrying the wheels on trailing arms of 13 in. length, the Flexitor units have the characteristics shown in the following table:

	Front	*Rear*
Approx. loading per unit (laden)	730 lb.	940 lb.
Approx. periodicity (Fw)	115 c.p.m.	125 c.p.m.
Axial stiffness	18,000 lb./in.	22,000 lb./in.
Radial stiffness	140,000 lb./in.	156,000 lb./in.
Resistance to tilting ..	40,000 lb./in./deg.	56,000 lb./in./deg.
Tilt (normal loading) ..	1/3 deg.	1/4 deg.

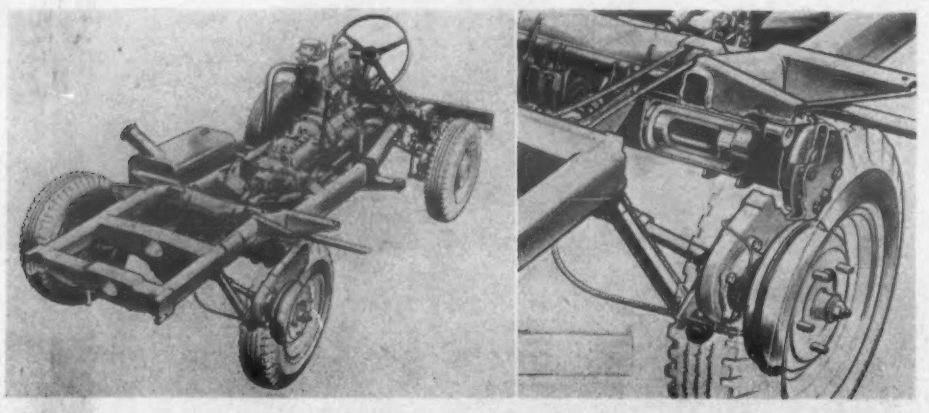
A full chassis frame is of welded tubular section with six crossmembers, one of which is the common outer casing of the front suspension units. The power unit can be either the B.M.C. overhead valve four-cylinder 134.1 cu. in. (2.199 litre) petrol engine, which develops 62 b.h.p. at 4,100 r.p.m. and 110 lb./ft. torque at 1,500 r.p.m., or the B.M.C. four-cylinder 132.7 cu. in. (2.178 litre) diesel engine, with an output of 55 b.h.p. at 3,500 r.p.m. and 89 lb./ft. torque at 2,800 r.p.m. Both of these engines are well established and have a long-standing reputation for reliability in a number of Austin vehicles.

Two views of the Austin Gipsy taken during development trials under cross-country conditions in which it is as much at home as on the road

Transmission

Power is transmitted through a Borg and Beck single dryplate clutch, 9 in. in diameter with the petrol engine and 10 in. with the diesel, to a unit-mounted four-speed gearbox with synchromesh on second, third and top gears. Ratios provided are 4.05, 2.35, 1.37 and 1 to 1 forward and 5.168 to 1 reverse. Mounted on the rear face of the main gearbox is a transfer gearbox providing direct drive through the rear axle only and a 2.02 to 1 reduction when four-wheel drive is engaged. Balanced open tubular propeller shafts, with Hardy Spicer needle roller bearing universal joints, carry the drive to front and rear axle-gear housings rigidly supported in the chassis frame. Axle gears are hypoid bevel final drive units, with 5.125 to 1 ratio, and bevel differentials. Open shafts with needle roller bearing joints transmit the drive to the hubs, which are stationary and support the flanged driving shafts in Timken tapered roller bearings. The steering swivel bosses are integral with the front hubs.

The high-efficiency cam-type steering gear has a ratio of 14.5 to 1 and is used in conjunction with an 18-in. dia. wheel. Semi-cross-country pattern tyres, 6.00-16 singles all round, are fitted to ventilated pressed-steel wheels with five-stud fixing; tyre sizes up to 8.90-15 can be fitted to special order. Hydraulically operated drum brakes, 10 in. by 1¾ in. on both axles, provide a total of 133 sq. in. lining area. The handbrake operates the rear brakes through cable linkage. The 12-volt electrical system includes a full lamp and flashing direction indicator set and is fully suppressed. A 13-gal. fuel tank provides a range of about 325 miles with the petrol engine and 420 miles with the diesel engine.



The Gipsy chassis, which has Spencer Moulton Flexitor independent suspension all round, and, right, a close-up of a rear suspension member with the Flexitor unit cut away to show construction

casings are dispensed with and the axle gear housings are supported in the chassis frame, the Flexitor unit has the added attraction that it requires no maintenance at all and is impervious to those common causes of suspension deterioration and wear—sand, mud and water thrown up by the wheels.

Development

The original patent for the Flexitor was taken out in 1948 and although this is the first complete application to a powered commercial vehicle, over 55,000 units have already been produced and fitted to trailers, specialist vehicles and miniature cars. Early development work was carried out on two-wheeled trailers, in which movement over broken ground often imposes as much as four times the static load on the suspension, compared with about two and a half times in powered vehicles under similar conditions. Severe trials of Flexitor-equipped Brockhouse trailers by the Ministry of Supply at Chobham took place in 1954, with entirely satisfactory results, and the Ministry of Supply subsequently arranged for similar trailers to be tested at Fort Churchill, in Canada, in temperatures down to minus 30 deg. F., in which it is reported the suspension could not be faulted.

Early in 1955, the Austin Motor Company became interested in Flexitor suspension and a prototype Gipsy started tests at the Motor Industry Research Association proving ground at Lindley, near Nuneaton, in December of that year. The vehicle covered more than 2,000 miles on the pavé track there, on which about 1,000 miles is considered equivalent to a lifetime of normal service, as well as thousands of miles of cross-country trials, without suspension fault.

Although rubber suspension has some inherent damping, it is insufficient to meet all conditions of operation and hydraulic dampers are incorporated in the Gipsy suspension. These are of the direct-action telescopic type at the rear and of the

Body

The body is of welded steel construction in one unit and has a capacity of 23½ cu. ft. in general load-space dimensions of 4 ft. 7⅛ in. long and 4 ft. 10⅛ in. wide with 1 ft. 5 in. high sides. Wheelboxes extend the full length on each side and the extensions beyond the central clearance for the wheels are formed into useful tool and gear lockers. The wheelboxes provide space for six seated passengers. The driving compartment provides comfortable seating for three abreast, a central instrument panel has a parcel shelf on each side and the windscreen, with two panels of toughened safety glass, can be folded down flat and secured to the bonnet top. Two wide doors give access to the compartment and

(*Continued on page 6*)

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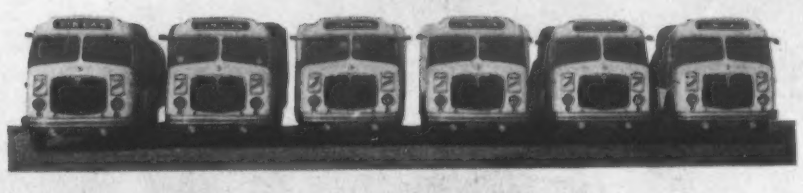

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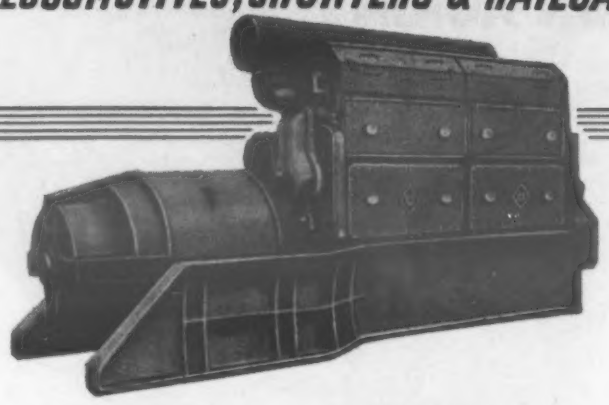

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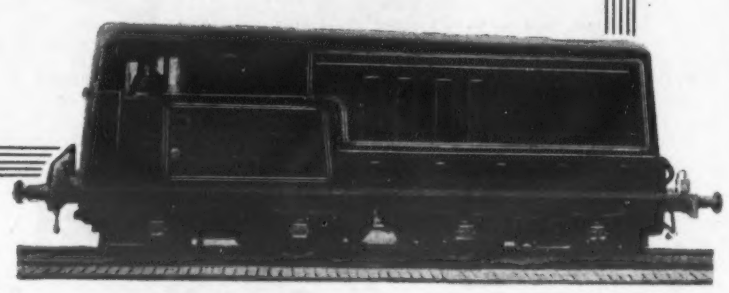

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INTRODUCED by the English Electric Co., Limited, is a revolutionary type of electrode which is designed for cutting grooves, gouging, piercing or removing surplus metal and which is equally effective on all steels, cast iron and non-ferrous metals. Designated Groovees, the electrodes can be used with ordinary a.c. or d.c. welding plant without additional equipment such as oxygen or air supplies. They leave a clean scale-free surface that requires no further preparation before rewelding. As the electrodes contain a steel wire core, carbon pick-up is obviated.

Removing Rivets

For cutting grooves, the Groovees electrode is held at an angle to the work surface, pointing in the direction of travel. After an arc is struck, the electrode is moved rapidly along the line to be gouged. The force of the arc cuts the groove and removes the molten metal giving a clean, bright finish. For gouging out defects in castings, a series of overlapping grooves are cut in alternate directions making it possible to remove a defect of considerable depth. When piercing holes or removing rivets, the electrode is held perpendicular to the workpiece, the arc struck and held until the metal flows, and then the electrode moved into the molten pool. With manipulation, holes up to ¾ in. diameter can be pierced in plate up to ½ in. thick; rivets can be removed from much thicker plate. Groovees are available in two standard sizes, 10 s.w.g. and 8 s.w.g.

B.U.T. SERVICE

Instruction School in India

AN instruction school, the first of its kind in the East, has been opened in Madras, India, by British United Traction, Limited, the world's largest suppliers of diesel railcar units. Situated at the Perambur works of the Southern Railway, the school has been formed to instruct personnel from both the Northern and Southern Railways of the Indian State system in the technique of servicing B.U.T. traction equipment.

A feature of the courses will be the extensive use of visual education. Sound colour films, some taken on the B.U.T.-powered diesel railcars of British Railways, will be used to explain driving techniques, operation of the epicyclic gearbox and the care of the diesel fuel system. Fuel-injection equipment maintenance will be demonstrated to the trainees during visits to the nearby Ennore works of Ashok Leyland, Limited. B.U.T. has also co-operated with oil suppliers to ensure that the trainees receive adequate instruction in the storage and handling of fuel and lubricants.

Concurrently with the opening of the diesel train school, 12 broad-gauge railcars arrived in Madras from Australia. These cars, produced at the Bassendean (Western Australia) works of the Commonwealth Engineering Co., Limited, are built under the Colombo Plan. The cars, which will operate in the Begwada division of the Southern Railway, will be followed later in the year by 12 more for the Northern Railway. All will be fitted with B.U.T. power, transmission and control equipment.

Versatile Austin Utility

(Continued from page 5)

are fitted with slip hinges for quick removal. The tailboard is also quickly removeable. A p.v.c.-coated leathercloth full tilt and hoopsticks are standard equipment, as are removeable sidescreens to the cab.

Optional Equipment

Optional extra equipment available with the Gipsy includes a tyre pump driven from a power take-off on the main gearbox; a full-torque power take-off on the auxiliary gearbox with propeller shaft drive to the rear of the vehicle or central pulley drive; front-mounted winch; second windscreen wiper; oil cooler; trailer-lamp socket; and upholstered seats for the rear body.

The Gipsy has a wheelbase of 7 ft. 6 in., overall length of 11 ft. 7 in., breadth of 5 ft. 6¾ in. and height of 6 ft. 1½ in. Front track is 4 ft. 6¾ in. and rear track 4 ft. 4 in. Dry weight is 24 cwt. with the petrol engine and 25¼ cwt. with the diesel, leaving a useful payload margin within the recommended gross weight of 40 cwt. The vehicle can provide a maximum drawbar pull of 3,000 lb. and road speeds in the various gears at 1,000 engine r.p.m. are, in high auxiliary 3.95, 6.8, 11.6 and 15.9 m.p.h. and in low auxiliary 1.95, 3.4, 5.8 and 7.9 m.p.h. in first, second, third and top main ratios respectively. Ex-works price in Britain, with petrol engine, is £650 and with diesel engine £755. There is no purchase tax. Pulley-drive power take-off and hand-throttle control cost £47 10s. extra.

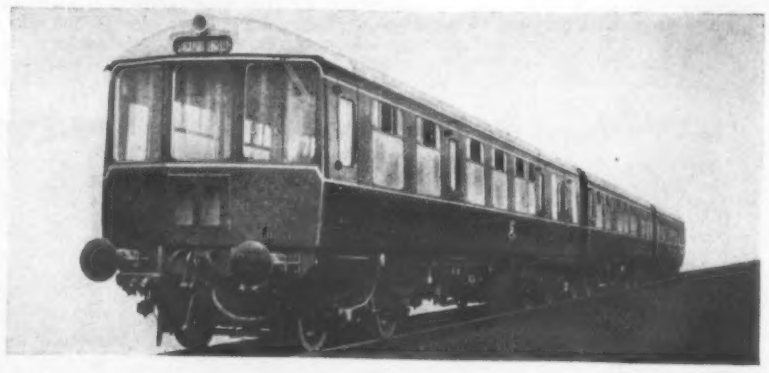
Last week, we were able to ride in a Gipsy demonstrated on the military Alpine test course on Bagshot Heath and also to drive both petrol- and diesel-engined vehicles over other sections of the heath. Stability at high speed over extremely rough surfaces was outstanding and the suspension gave a firm but comfortable ride over less-rough surfaces. Excellent wheel adhesion was also evident from a lively performance and gradient-ability with a 5-cwt. load and "crew" of three in two-wheel drive and high ratio.

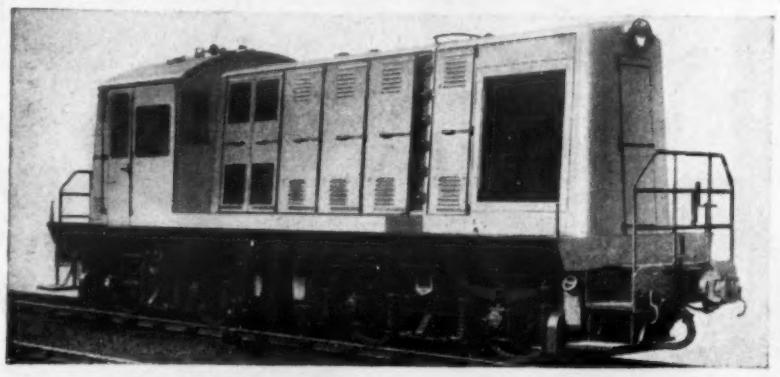
Go-anywhere Vehicle

The Gipsy is a well-conceived go-anywhere vehicle, robust enough for the hardest tasks and the roughest conditions. Two points only we think might improve it further; a locking differential in the back axle would obviate the need for engaging front drive and low ratio (and probably be more effective) in many conditions of rutted, slippery or loose surface and a higher-ratio steering gear would perhaps give quicker control of wheel breakaway in fast cornering on slippery surfaces, which we found rather slow.

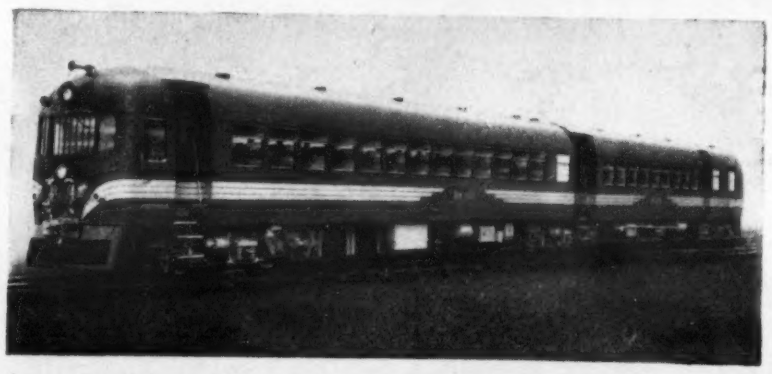
COMMONWEALTH RAILWAYS OF AUSTRALIA
955 H.P. Diesel-Electric Locomotive (10 Ton Axle Load)
In collaboration with Sulzer Bros. (London) Ltd. and Crompton Parkinson Ltd.

BRITISH RAILWAYS
Three Unit Diesel Mechanical Railcars

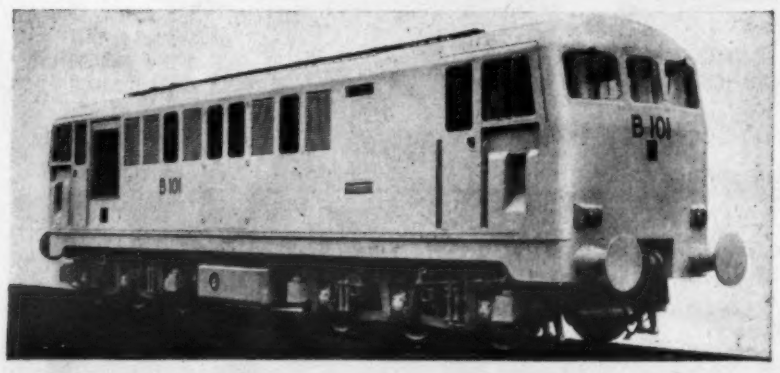




GHANA RAILWAYS
400 h.p. Diesel Electric Locomotive

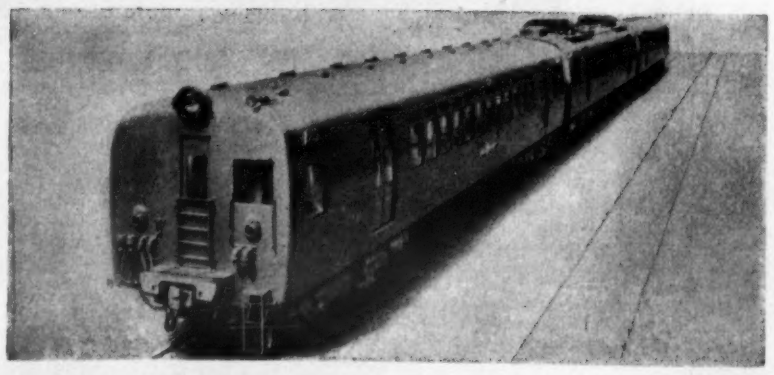


NEW ZEALAND GOVERNMENT RAILWAYS
Twin Articulated Diesel Mechanical Railcars
In collaboration with The Drewry Car Co. Ltd.



CORAS IOMPAIR EIREANN RAILWAYS
960 h.p. Diesel Electric Locomotive

SANTOS JUNDIAI RAILWAY, BRAZIL
3,000 Volts, 800 H.P. Three Car Train
In collaboration with The English Electric Co. Ltd.



THE BIRMINGHAM RAILWAY CARRIAGE & WAGON CO·LTD
Smethwick
TELEPHONE SMETHWICK·1881
TELEGRAMS 'CARRIAGE SMETHWICK

IRISH FERRY ROAD FREIGHT SERVICES

B.R.S. Completes New Preston Depot

TRAFFIC INCREASED LAST YEAR

CONSTRUCTION of the British Road Services Irish Ferry branch premises at Albert Edward Dock, Preston, was recently completed and last week saw their formal opening by the Mayor of Preston, Councillor C. Hearn, J.P. (himself a former haulier), in the presence of Lord Rusholme, a member of the British Transport Commission and chairman of its Road Haulage Sub-Commission, and Major-General G. N. Russell, chairman of British Road Services, Limited. There were also present a large number of representatives of users of the service, as well as Mr. W. J. Thompson, Assistant Secretary, Northern Ireland Ministry of Commerce, and representatives of the Ulster Transport Authority; Mr. W. E. Macve, divisional manager, North Western Division, B.R.S.; Mr. W. Parkinson, district manager, Preston; and Mr. R. G. Davies, Irish Ferry branch manager.

The Irish Ferry branch is responsible for all throughout movement of general freight traffic between Great Britain and Northern Ireland via the well-known Preston—Larne route of the Trans-port Ferry Service. The value of direct transit without intermediate handling, thereby eliminating delays, packing requirements and damage, has become widely appreciated by traders, and is evidenced by the latest traffic figures. Last year, nearly 106,000 tons of goods were moved by the B.R.S. service alone, an increase of almost 20,000 tons on 1956. The *Bardic Ferry*, first of two new drive-on-drive-off vessels designed specifically for the route, was described in our September 28, 1957, issue, when it entered service.

Limited, was acquired. For the present it retains its separate organisation. Ferry Trailers was the first to provide this class of service between Preston and Larne and dates from the inauguration of the service in 1948. Hitherto it has relied on other hauliers to provide tractors for its semi-trailer fleet.

The new depot, in reasonable proximity to the ferry loading berth, covers an area of about two acres. Administration is carried on within a single-storey office block with a floor area of 1,500 sq. ft. The branch manager, commercial manager, traffic and accounting staff are accommodated here and there is an enclosed area where drivers arriving at the depot are able to report and receive instructions from the traffic clerk. This building, and also the gate office, are heated by means of electric off-peak storage heaters, which dispense with the need for a boiler-house and its attendant labour.

Transit Sheds

The traffic on this B.R.S. service is carried mainly on articulated trailers and partly in containers which are off-loaded by a 15-ton Butters electric Scotch derrick crane with 80-ft. jib. Goods which have to be transhipped from one container to another are taken to transhipping bays which adjoin the main depot. These buildings, once old open-sided sheds, have been enclosed in brick and glass and given new floors and lighting. The total covered area for transhipping and storage is 20,000 sq. ft. and includes a loading platform. Loaded trailers are hauled to the nearby compound alongside the dock to await transfer to the ferry. Containers are normally carried as deck cargo.

B.R.S. Irish Ferry branch premises at Preston Dock. Maintenance workshop is in right background; the transhipment sheds are on the roadway seen in the foreground

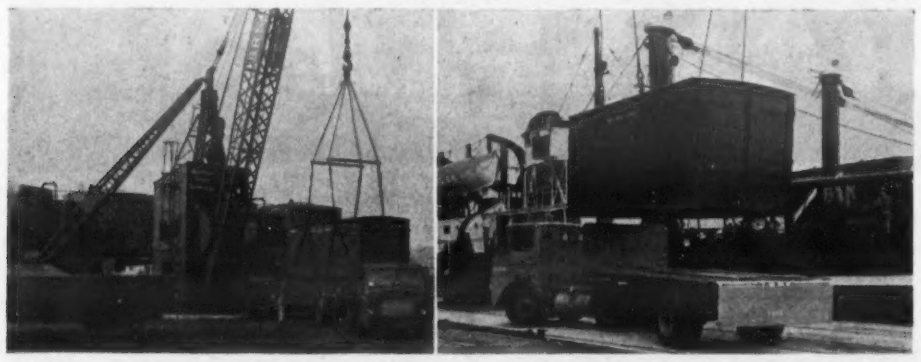
Operations

The branch has operating depots at both terminal points and communications between them are by both telephone and teleprinter, the latter being also connected to the B.R.S. teleprinter network throughout Great Britain. There are focal points and representatives established for the Preston—Larne service in every B.R.S district, but all vehicle movements and the fleet itself are under the sole control of Preston. Semi-trailers are not permitted to go into common user, as is otherwise normal B.R.S. practice. A Belfast commercial office deals with customer inquiries and consignments from Northern Ireland to Britain. The ferry service is now used daily by B.R.S. between Preston and Larne; in addition, it hires space in another ferry vessel (not of the special B.R.S. drive-on-drive-off category) which makes bi-weekly runs between Larne and Troon, in Ayrshire, for Scottish traffic. Semi-trailers are craned on and off this ship.

Maintenance Workshop

Normal repair and maintenance of the fleet of vehicles is provided for in a new brick-built workshop which has a floor area of about 4,500 sq. ft. It is equipped with two inspection pits, lock-up stores, offices, and lavatory accommodation. Depot staff are provided with a modest messroom.

Lord Rusholme, speaking at a luncheon in honour of the occasion, congratulated the Mayor and Corporation of Preston on the £1,200,000 port improvement works which they had carried out in recent years. The trade of the port had risen sharply since the 1939-45 war, he said; British Road Services and similar activities had made a substantial contribution to that increase. The Transport Ferry Service was begun in 1948, and in that first year there was an increase of trade at Preston Dock from 66,000 to 96,000 tons. Since then the ferry service trade had rapidly increased and last year nearly half a million tons of cargo—nearly a third of the total trade of the port—passed through Preston Dock to or from Northern Ireland. These figures underline the far-sightedness of the Corporation of Preston in providing modern and adequate dock facilities for the traders who used the docks.



A Butters 15-ton Scotch derrick with 80-ft. jib carries out the off-loading and storage of containers, which are carried as deck cargo on the Transport Ferry. The Leyland Comet-Scammell articulated vehicles are two of the fleet of 44 based at this branch

History of Service

British Road Services is the largest of four companies operating trailer services on the ferry. The semi-trailers (and occasionally drawbar trailers) are shunted on to the ferry and travel unaccompanied by the tractor. In Northern Ireland, the Ulster Transport Authority provides tractors; for through movements into Eire (at present a very small item), Coras Iompair Eireann send tractors to the U.T.A. depot at Newry, where semi-trailers are exchanged. B.R.S. derived its service initially from P. L. and G. S. Harris, Limited, of Lostock Gralam, near Northwich. After this company was acquired by B.R.S. the base was moved (in 1950) to a more convenient site in Preston Dock and since then the scale of operations has been greatly expanded.

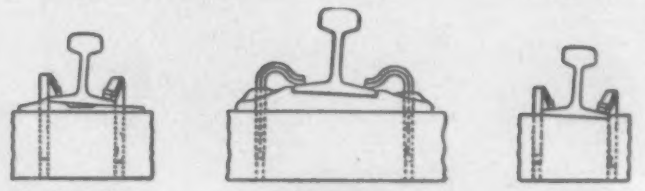
A completely new fleet of vehicles was provided during 1956 and onwards. It comprises 44 Leyland Comet tractors, 240 11-ton semi-trailers with Scammell coupling, over 60 8-9 ton containers and 90 10-ton Lancashire flats. A number of special-purpose semi-trailers run under contract to traders and they are painted to the requirements of the latter. Towards the end of last year, one of the other trailer businesses, that of Ferry Trailers,

Depots Rebuilt or Resited

Completion of the Irish Ferry branch at Preston signalised the policy of co-ordinating—and sometimes resiting—the various B.R.S. depots throughout the country in the best interests of traders. British Road Services had nearly 400 depots, large and small, and while (said Lord Rusholme) they might not be able, owing to restrictions on capital expenditure, to go ahead with ventures of this kind as quickly as General Russell would wish, nevertheless, his policy had already resulted in some of the finest depots in the country.

British Insulated Callender's Cables, Limited, has opened a new depot at 511 Roumelia Lane, Boscombe, Hants (telephone Boscombe 36223). The stocks to be held will include a comprehensive range of wiring types of cables and accessories.

ELASTIC RAIL SPIKES



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- Light diesel engine developing 54 b.h.p; or 4 cyl. o.h.v. petrol engine developing 53.5 b.h.p., with long life chrome bores.
- Full forward control with over 11' bodyspace on 8' 2" w.b. chassis; over 14' on 10' 2" w.b. chassis.
- Gross vehicle weight 99 cwts.
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- Low platform easier and quicker to load.
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NEWS FROM ALL QUARTERS

Sheffield Tram Preserved

Sheffield Transport Committee is presenting a tram, built in the Queen's Road works in 1927, to the Tramway Museum Society.

Hong Kong Road Problems

Latest statistics reveal that traffic on roads in Hong Kong had increased fivefold since 1945 and with 450 miles of road in the territory there were over 60 vehicles per mile of road, reports the International Road Federation

East Coast Track Improvement

Improvements to the track, bridge and signalbox at Shaftholme Junction, four miles north of Doncaster where the East Coast main railway line enters the North Eastern Region, have made the line suitable for train speeds up to 100 m.p.h., it is announced.

Green Arrow Service for All Traffic

Beginning on March 3, the British Railways Green Arrow registered transit arrangement, under which consignments are specially watched and notified at various control points throughout the journey, will be extended to all classes of freight traffic conveyed in full wagon-loads. This service, for which a registration fee of 2s. 6d. per consignment is payable, is at present available only for full wagon-loads for shipment, and for all perishable, livestock and household removal traffic.

Newbury Relief Road

Work is to start shortly on an East-West relief road for Newbury, which lies on the London—Bristol trunk road, A4. The narrow streets of Newbury carry much local and through traffic and delays and congestion occur both at the Clock Tower and at the short bottleneck through Oxford Street, which is used also by traffic on the Winchester—Oxford trunk road, A34. The new road, a mile long, will be built to the north of the existing road.

New S.M.M.T. Headquarters Purchased

The Society of Motor Manufacturers and Traders has purchased Forbes House, a Georgian property standing in nearly one acre of ground with important frontages to Halkin Street and Grosvenor Crescent, Belgravia. Originally constructed by the Earl of Granard, Master of the King's Horse, it is to be the new headquarters of the S.M.M.T. As already recorded in MODERN TRANSPORT, it has to relinquish the tenancy of 148 Piccadilly owing to the new road scheme for Hyde Park Corner.

B.T.C. Film the Best Documentary

The British Transport Commission colour film *Journey Into Spring* has received the British Film Academy award for the best documentary film for 1957 from any source, British or foreign. Produced by Ian Ferguson and directed by Ralph Keene, this travel film reveals the natural beauty of southern England as exemplified by the Hampshire village of Selbourne, home of the Reverend Gilbert White, country parson and naturalist. It was made by the B.T.C. Film Unit, under Mr. Edgar Anstey.

Southern Region Freight Services

Principal freight train services in the Southern Region are scheduled in a new booklet which is now available. Details of latest times of acceptance of traffic can be obtained from local stations.

Kerb Drill Promoted by Fleet Owner

Greater London has been chosen for a major road-safety campaign devised by T. Wall and Sons (Ice Cream), Limited, to emphasise to children the importance of "kerb drill." Instructions are set out on leaflets to be distributed by upwards of 10,000 shopkeepers in the area, as well as by Wall's own door-to-door ice-cream retail vehicles.

Montreal Expressway

Work is now under way on the long-mooted expressway which will cross Montreal Island over a distance of about 31½ miles. The road will have six limited-access high-speed traffic lanes and service roads on either side for local travel. Elevated sections totalling about six miles in length will be incorporated with the remainder at ground level. Payment is being shared by all 32 municipalities on the island on a proportional basis.

Road Traffic Orders

The National Road Transport Federation has sent a letter to local authorities calling attention to the provisions in section 33 of the Road Traffic Act, 1956, for orders regulating traffic on roads and referring more particularly to exemptions for trade vehicles and public service vehicles. It asks for an assurance that in preparing draft traffic regulation orders due regard will be had to points made on behalf of the Federation and its constituent associations, and asks to be notified in advance of draft proposals for traffic regulations.

Italian Railwaymen's Pensions

Increases in Italian railwaymen's pensions have been announced in accordance with a recent legislative enactment on pensions of State employees. With effect from July 1, the pensions of established employees of the Italian State Railways are increased to 35 per cent, 36.8 per cent, 38.6 per cent, 40.4 per cent and 42.2 per cent of the salary or wages last drawn (including pensionable allowances) after 15, 16, 17, 18 and 19 years' service respectively. The new Act also allows the widow to draw the pension if the marriage was contracted after the employee retired.

New West Riding Diesel Services

New through diesel services between Leeds, Normanton, Wakefield and Barnsley are to be introduced on the North Eastern Region on March 3. There will be 15 trains in each direction, nearly all at regular hourly intervals, with some additional services between Wakefield and Barnsley Exchange in the early morning and late evening. Most of the diesel trains now running between Leeds and Castleford will be extended to Pontefract, while a number of the existing services between Wakefield and Bradford will be extended to Pontefract and Goole. Steam trains between Huddersfield and Wakefield Westgate are to be replaced, as are some of the Leeds—Wakefield—Doncaster services.

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EXTRA MILEAGE TREAD
—Precision-balanced rib design increases service because tread wears slowly and evenly. Abrasion resistant rubber compound gives longer wear.

IMPROVED SHOULDER DESIGN
—Maximum protection against curb-scuffing. Deep grooves promote quick dissipation of heat.

SAFETY-TENSIONED GUM-DIPPED CORD BODY
—Tension drying of body cords eliminates tyre growth, tread cracking, and gives positive mating of dual tyres.

WIDER, FLATTER TREAD
—More rubber on the road gives more uniform wear, increases mileage and gives greater resistance to skidding.

RIM-FITTING BEADS
—Stronger bead foundation reduces bead and side-wall failure because excess chafing and flexing are eliminated.

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Experience Counts
44 factories throughout the world. Firestone total sales exceed £1,000,000 per day.

Firestone TYRES—
consistently good

COMMERCIAL AVIATION

Eagle in Bermuda

AIRCO BOARD MEETS

IT has been announced by Eagle Airways (Bermuda), Limited, that it proposes to commence operations in the western hemisphere on May 1 with an initial frequency of seven flights weekly between New York and Bermuda. Eagle Airways (Bermuda) has been designated by the United Kingdom Government within the terms of the Anglo-U.S. Air Agreement to serve this route and has also received designation within the terms of the Canadian Air Agreement to operate routes from Canada to Bermuda. The Bermuda Government has authorised Eagle Airways to operate such services for a period of ten years from January 1, 1958. The Civil Aeronautics Board in Washington has heard the case for a foreign carrier and the decision of the examiner has been to recommend the proposed services. The issuing of the foreign air carrier permit is now subject to the final approval of the President of the United States of America. It is hoped that, in the first instance, Vickers Viscount 800 Series aircraft will be used with a seat configuration for both first and tourist class passengers. The normal I.A.T.A. fares will apply.

T.W.A. Twelfth International Anniversary

Trans World Airlines announced this week that, since the start of its international operations, 12 years ago in February, the airline had flown more than 1,676,000 passengers across the Atlantic on more than 33,000 flights. A dozen years ago the transatlantic timetable comprised two flights weekly between New York and Paris. This year, during the peak summer period, from June 1, T.W.A. will operate 124 transatlantic flights weekly between the United States and Europe.

B.O.A.C.-Q.E.A. Westabout Cargo Service

A through cargo service from New York to destinations in Australia and New Zealand is now being offered jointly by the British Overseas Airways Corporation and Qantas Empire Airways. Four weekly services are being operated by B.O.A.C. and Qantas between New York and San Francisco. Two of these (Qantas) go direct to Sydney and Melbourne, while the others connect at San Francisco with Q.E.A. transpacific flights. Services to Auckland, New Zealand, are provided by a connection with Tasman Empire Airways at Fiji, where all Qantas transpacific flights call.

London—Paris Freight Service

A new air freight service to Paris, which is to be introduced by Skyways on April 8, is designed to enable consignments from London to Paris, and vice versa, to reach their destination in under 24 hr., including Customs clearances in both the United Kingdom and France. There will be daily departures from the London and Paris depots. All freight received by the close of business one day will be available for collection at the other terminal depot the following evening. Minimum consignment rate is for 5 kg. and it is at 1s. 2d. per kg. below 45 kg. and 10d. per kg. over 45 kg. for the depot-to-depot trip, or 10d. per kg. below 45 kg. and 7½d. per kg. over 45 kg. from airport to airport.

Swissair Operations in 1957

A sizeable increase in fleet capacity and a large extension of the route network brought Swissair a substantial traffic increase in 1957. Nearly 1 million passengers were carried—992,911—an increase of 28 per cent over the 1956 figure. Capacity offered increased by 53 per cent to 115,874,330 short ton-miles and the number of miles flown was 18,106,530, compared with 13,716,620. Air freight carried rose from 10,421 to 12,373 metric tons, or by 19 per cent, and the volume of air mail showed an increase of 21 per cent, totalling 4,353 tons. The overall load factor on the scheduled services was 61.6 per cent; for 1956 it was 66.5 per cent. The unduplicated length of Swissair routes rose in 1957 to 71,450 miles, mainly because of the opening of a new route to the Far East, new North Atlantic services through Cologne and Lisbon and the extension of the South American services to Buenos Aires.

November Activity at British Aerodromes

In November, 1957, the number of passengers handled at United Kingdom aerodromes was 328,711, an increase of 7 per cent over November, 1956. The number of air transport movements was 17,335, a decrease of 7 per cent over November, 1956. Freight on and off loaded amounted to 8,787 short tons, a decrease of 32 per cent. (The November, 1956, figure was higher than usual because of large carryings of cattle cross-Channel.) Post Office mail set down and picked up also decreased by 7 per cent to 1,523 short tons. At London Airport there were 7,257 air transport movements, an increase of 8 per cent, and 193,562 passengers were handled, an increase of 12 per cent. Airports at which passenger traffic increased considerably over November, 1956, were Ferryfield 97 per cent, Glasgow (Renfrew) 22 per cent, and Manchester (Ringway) 15 per cent. Other substantial increases in passenger traffic were at Bristol (Lulsgate Bottom), which showed an increase of 47 per cent over Bristol (Whitchurch) traffic, Blackpool (Squires Gate) traffic increased by 39 per cent to 516, Bournemouth (Hurn) by 36 per cent to 911, Croydon by 28 per cent to 1,523 and Aberdeen (Dyce) by 24 per cent to 2,623.

Planning for the DH121

The first meeting of the board of the Aircraft Manufacturing Co., Limited, was held at Hatfield on February 19 to confirm arrangements already in hand for the development, production and marketing of the DH121 jet air liner to meet the requirements of British European Airways. The board comprises Messrs. W. E. Nixon (chairman), Richard Fairey (deputy chairman), A. F. Burke (managing director), C. P. M. Hunting, A. S. Kennedy, F. E. N. St. Barbe and W. A. Summers. The nominal capital of the company has been allotted to de Havilland (67½ per cent), Hunting Aircraft (22½ per cent) and Fairey Aviation (10 per cent) on the basis already foreshadowed. It was decided to arrange for the increase of the capital to £1 million to cover the early stages of the project. The board confirmed the appointment of four executive teams of the three companies to be responsible for finance and administration, technical organisation, production and world marketing. Considerable progress has in fact already been made towards the finalising of the specification and of design features, also in respect of contract negotiations with British European Airways. Plans for production are already in hand. Sales negotiations are in progress and technical sales teams have already gone overseas.

TRAFFIC ORGANISATION OF WESTERN REGION

Mr. A. C. B. PICKFORD, M.Inst.T.

• • • • • •

Under the revised organisation of the Western Region of British Railways, Mr. Arthur Charles Baden Pickford, who had been chief commercial manager (previously titled commercial superintendent) since April, 1954, became assistant general manager (traffic) as recorded in MODERN TRANSPORT at the time. He entered the service of the Taff Vale Railway in 1915 and after grouping had experience at Great Western stations and district offices in South Wales. He was appointed to the staff department at Paddington as an outdoor investigator in 1929. Three years later he was made personal secretary to the chief goods manager and in 1934 he became goods agent at Slough. Mr. Pickford returned to Paddington in 1937 as a member of the commercial research department and represented the G.W.R. on liaison committees with the Ministries of Food and Supply and on the freight rolling stock centralised committee. Appointed rates assistant (research) to the chief goods manager in 1941, he went back to South Wales in 1943 as district goods manager, Swansea, moving to a similar post at Cardiff two years later. In 1947 he was made South Wales Area assistant to the chief goods manager and upon the formation of the Railway Executive in 1948 he returned to London as executive officer (terminals), being chairman of the terminals committee. He has represented British Railways on the International Union of Railways and the International Container Bureau, besides leading a team comprising traders and transport interests to the United States in 1950 to study freight handling in particular. He was a member of the Winter Transport Conference and chairman of the Winter Transport Central Joint Committee. Mr. Pickford is a director of a number of bus undertakings associated with British Railways, including the Birmingham and Midland, Bristol, City of Oxford, Red and White, Southern and Western National, Thames Valley, United Welsh, and Western Welsh companies. He is a past member of council of the Institute of Transport, to the proceedings of which he has made a number of contributions, and of the Institute of Materials Handling.

IN PARLIAMENT

New Road Transport Census

CAPITAL FOR STATE BOARDS

IT was announced by the Ministry of Transport that there is to be another survey of road goods transport in the week beginning April 21. A previous sample survey was carried out by the department in 1952.

Three-year Driving Licence Anomaly

By virtue of section 48 of the Road Traffic Act, 1956, public service vehicle drivers who attained the retirement age when a renewal of the new three-year driving licence is due were compelled to pay a renewal fee of 15s., whereas their retirement might fall within the next 12 months, complained MR. F. MCLEAVY. MR. H. WATKINSON said that to provide for pro rata licences in that situation would require new legislation; he would review the matter at a suitable opportunity.

No Saving from Abandonment of C-Licences

Asked how much it was estimated would be saved in a full year if C-licences were not required for goods vehicles weighing less than two tons unladen which are now subject to them, MR. HAROLD WATKINSON replied: "Nothing, since the revenue from these licences more than covers the expenditure falling on my departmental votes." He told the questioner, MR. ERNEST DAVIES, that the total cost of the goods vehicle licensing system was about £600.000 annually, some £150,000 being attributable to C-licences.

Public Investment in State Boards

The Minister of Transport and Civil Aviation was asked how much of the new capital required by the British Transport Commission and the airways corporations has been provided by those boards themselves and how much out of public funds. MR. H. WATKINSON replied that capital expenditure of the B.T.C. on fixed assets since its formation on January 1, 1948, amounted to about £730 million. Towards this about £430 million had been provided by the Commission itself from depreciation provisions, changes in the levels of internal funds and cash and investment resources; issues of British Transport Stock to the public under Government guarantee provided £200 million, and the balance of £100 million was met by Exchequer advances under section 42 of the Finance Act, 1956.

Between April 1, 1946, and March 31, 1957, B.O.A.C. capital expenditure totalled £140,500,000. Of this £56 million was provided from internal sources, £63,750,000 was raised by issues of stock to the National Debt Commissioners with Treasury guarantee, £9,900,000 by advances from the Exchequer and £10,800,000 by bank loan. B.E.A. capital expenditure between the date of its formation on August 1, 1946, and March 31, 1957, totalled £39,250,000; £16,250,000 from internal sources; £16 million raised by issues of stock to the National Debt Commissioners with Treasury guarantee and £7 million by advances from the Exchequer.

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LONDON BUS WAGE INQUIRY

L.T.E. Resists Any Award

FIGURES relating bus wages in London to cost of living indexes were put in by Mr. H. R. Nicholas, assistant general secretary of the T. and G.W.U., when the Industrial Court opened its inquiry in public on the London Transport bus employees wage dispute. There is a claim for a 25s. per week wage increase. Mr. Nicholas submitted that in the Central bus section for drivers the weekly wage rate in 1939 was 90s. and now was 193s. 6d. For conductors it was 84s. in 1939 and now 189s. 6d. The differential between drivers and conductors had been reduced from 6s. to 4s. but within this application the union had not sought to change the differentials.

Referring to the cost of living, he said the union were taking the London and Cambridge bulletin index figure, which in 1938 stood at 100 and which in 1957 stood at 270. Since September, 1939, increases in the Central bus section ranged from 115 per cent to 129.2 per cent, and in the trolleybus section from 124.2 per cent to 136 per cent—all considerably below the cost of living figures. The union strongly objected to rostered earnings being used against them on a claim for improved basic rates as these represented the result of inconveniences to workers (in overtime, Saturday and Sunday work, and "obnoxious" spreadover duties). They would "cure the men of any desire to give the services due to the public."

First Arbitrated Claim in 15 Years

For London Transport, Mr. Anthony Bull, a member of the Executive, said they were asking the court to find that there should not be any award. Since the war there had been ten applications for an increase in standard rates of pay. In the nine cases prior to the current application, a negotiated settlement had been reached. This was the first occasion in the past 15 years that any claim for an increase had been referred to arbitration.

"What we have said is that the arguments on the position and duties of the Central bus section cannot be used to support a flat-rate increase for all grades. Our position has been and remains that we do not think it is right that there should be an increase in pay for any London Transport staff at this time," said Mr. Bull.

At a resumed hearing Mr. Bull said that if London Transport was to continue to discharge its statutory duty to provide an adequate service, the money to provide an increase in pay could only be provided by an increase in fares. Every fare revision stimulated the public to provide their own means of transport. Some people would walk to save paying a minimum fare of 3d. and any increase in fares to meet the present claim would have to be severe. Passengers on all London Transport services had fallen by 15.3 per cent since 1950. On road services alone they had fallen by 17.1 per cent in that time. There had been seven wage increases for road service staff between 1950 and 1957, and similar increases had been given to the remainder of the staff. There had also been costly improvements in the conditions of service. There had also been seven increases in fares from 1950 to 1957. But London Transport had not been able to pay its way; at the end of 1956 it had accumulated a deficit of about £16 million.

In reply Mr. Nicholas termed the basic wages of bus crews "labourers' rates" and said busmen were not prepared to accept a considerably reduced standard of life as compared with 1939. The hearing was concluded.

RAILWAY MANAGEMENT

*Organisation to Meet Conditions (Cont.)**

By E. W. ARKLE, M.Inst.T., Director of Traffic Services, London Midland Region, British Railways

HAVING set the stage it is time to explore possible ways of finding and preparing the future stage managers—perhaps the most difficult aspect of the whole problem. The factor most likely to import delay into these big changes is quite likely to be that of selecting and training the necessary managers, assistants, district officers and other staff within the next two or three years. Not only have the existing officers an unusually high average age—well into the upper fifties, but also in some cases the next rank of assistants and even the one behind that also consists of elderly types who are very excellent railwaymen but who will all be thinking of retirement within the next five years. Already there is a marked lack of suitable candidates for some of the senior posts in what may be termed the old organisation and the superimposition of a series of new managerial posts can, of course, only accentuate the shortage.

The reasons are not difficult to find; years of cutting down of staff and even a long period of non-recruitment in the thirties, plus the ravages of two wars—these are things that have affected many industries besides the railways. But in addition one as to face the plain fact that the intake of today—by and large and with notable exceptions—is not quite of the calibre of that of 30 years ago and more. Those who come to us from the universities through the traffic apprenticeship scheme are rarely honours men, because, I suppose, the attractions of a scientific career are so much greater and the prospects so much better. It is not a good thing for a recruiting effort to hear constantly that the staff are too numerous and are to be cut, as we have been doing off and on now for a quarter of a century. None the less there is plenty of good material available at the lower levels and it is up to us to fashion it as we want and provide ourselves from within the industry with a strong managerial force.

High Standard of Entry

One of the things which we badly need is to get back to the high standard of entry required from an ordinary clerk from a secondary school. By this means we automatically strengthen the field for traffic apprenticeship seeing that the majority of these are awarded to staff already in the service. Those who fail to make the grade should be weeded out at an early stage and those who do make it should be encouraged, watched and developed to a far greater degree than hitherto. Most boys have known at their school or in the army roughly how they were progressing, but too often they may have felt in industry that nobody really cares. One graduate is quoted in that excellent pamphlet issued by the Department of Scientific and Industrial Research and entitled *Managers for Tomorrow*, as saying that "some companies are like an elephant which sometimes takes you for a ride and sometimes sits on you, so that you are never quite certain what it is going to do." Residential courses for building up the pupil's general knowledge and transport background, as well as just giving him the bare outlines of the job he is doing are one way of avoiding the growth of any feelings of this sort.

The next urgent necessity is that of spotting talent and doing it in a planned and orderly way as against the haphazard and sometimes dangerous methods which have been known to prevail in the past. It is a curious thing, and we have all met it, that some quite eminent people seem quite unable to do this for themselves and it is a failing which can have very serious results for the undertaking. Again regular systems of interviewing by carefully trained staff and opportunities for observation at schools and training centres seem to be called for on a large scale.

Special Training

Sooner or later the next step must inevitably be the selection of a candidate for special training. However much may be said against an elite corps, notably that it spoils its own members and frustrates those outside it, it is difficult to see how any other system could be adapted to railway needs. It is a good thing if care is taken to look after those who fail by a narrow margin to qualify for special training, as there are plenty of opportunities for such hard luck cases in a modern railway.

The traffic apprentice scheme has now been running in some parts of the country for 40 years or so and has not been greatly altered in essence. It caters both for the graduate from outside and for the boy who has joined as a clerk and then sits a fairly stiff examination. The training itself is peculiarly adapted to present-day needs, covering all aspects of operating, commercial and motive power work ranging from the smallest station to the head office. Perhaps it would be more attractive if there was a greater degree of actuai work than of watching incorporated, but there are of course difficulties and in any event the really active and enterprising youth will see to it that he is getting his share of actually "having a go" at what he is learning.

Following up the Trainee

The last link in the chain is, of course, the following up of the trainee into the lower ranges of management and thence up through the strata of management itself. Perhaps it is here that we have sometimes neglected our opportunities in the past. If so, it renders much of the time and money spent on training entirely futile. My own opinion is that a great deal was done in the early stages of nationalisation to destroy the proper opportunities for planned advancement without substituting some other system, in the mistaken idea that the great thing was to mix up or break dow" the traditions of the old companies. It is

(*Continued at the foot of next column*)

high time that either a central training plan should be adopted (which would be unwieldy and perhaps not fully effective) or failing that there should be a reversion to a series of separate plans, probably on a regional basis. I am certain that any ill effects on present width of choice and of experience, and on the mixing of ideas, will be far more outweighed by the advantage of a settled scheme watched over and executed by responsible officers who know that any plan they adopt for an individual will have a good chance of being completed up to a stage of, say, £1,500 per annum, after which the individual and the region can take care of itself.

Look Forward, not Back

I was much struck when I read the other day the quoted words of a retired steel combine president. On being asked how he assessed the qualities of a manager, he said, "A manager is past his best as soon as he starts talking more about what he did in the past than about what he plans to do in the future."

I wonder if these words have a peculiar significance for railwaymen, who are so prone to suffer from nostalgia, to admire their Doric arches and their past achievements. I feel sure that in places where people talk the roadmen say far less about the Bouts Tillotson days than railwaymen do about the good old L. and Y. or the Great Western. A little, yes, but now if ever is the time for the forward look, the really forward look.

* Abstract of a paper presented to the North Western section of the Institute of Transport. Previous portions appeared February 8 and 15

LETTERS TO THE EDITOR

Automatic Warning Control

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

SIR,—On reading the article in MODERN TRANSPORT of February 13 about the B.T.C. system of automatic warning control, one must applaud the honesty of the relevant authority in so clearly setting forth its fundamental contradictions, its limited utility and its appalling cost and complication in relation to what it is expected to do.

It "does not . . . relieve a driver of his normal and inescapable responsibility for observing signals on his route." In effect the driver is told that he must not rely on the signals that the a.w.c. gives him at such expense. "An interesting addition . . . is an indicator in the cab which is a useful adjunct to audible warnings." When a.w.c. was being discussed in the early days of the G.W.R. experiments over 50 years ago, it was laid down as a principle that cab-signalling apparatus should neither require nor induce the driver to take his eyes from the road. The visual indicator "serves to remind the driver" only if something else reminds him to look at it instead of where he is going.

Records of accidents that might have been avoided by a.w.c. indicate that the system now described is many times more expensive in installation and maintenance than would be the accidents that it is at all likely to avoid in the next 20 years or so. It is unfortunate that attention should be drawn at this time to extension of a system that can do nothing to avoid such accidents as those at St. Johns (December 4, 1957) and Dagenham (January 30, 1958) when it is possible to safeguard against them by apparatus that would also do everything useful that the B.T.C. system is claimed to do, at about one-fifth of its cost.

Apparatus of the degree of elaboration shown in the article might be expected to suffice for complete control of a driverless locomotive which is surely the first step in any real modernisation of railway working at least with electric traction.—Yours faithfully,

W. A. TUPLIN.

Beech Dell, Collegiate Crescent, Sheffield, 10.

Streamlining and Modern Design

SIR,—It is distressing to find that the public relations officer of the Southern Region has joined your own editorial staff in equating streamlining with the best in modern industrial design. While submitting that the original Great Western railcars were, externally at least, among the most beautiful railway vehicles ever to run in this country, I do not suggest that a similar end treatment would be at all suitable for multiple unit trains. Of the curiously non-standardised batches of such units which have so far appeared, perhaps those built by Cravens are the most handsome in this respect, and these can hardly be described as streamlined, or likened to sports cars. Incidentally, the remainder of the Cravens bodywork outline conforms to previously established standards.

By comparison the Southern diesels show no evidence of planned end treatment at all. And this goes for the closely related electric practice of recent years, please note, Mr. Faulkner. Far from being produced at short notice, the present styleless result has developed step by step from the first 4-SUB sets of 1940. Admittedly the satisfactory incorporation of a vestibule connection in a front end is a problem, but it is to be hoped that the Design Panel will be able to make its influence felt before any further 4-CEPB sets are built for the Kent electrification. The argument that many people appear to be blind to their surroundings is surely no reason for deliberate ugliness.

Finally, returning to diesel trains, it would be interesting to know why, when one toilet compartment has been thought sufficient for all the passengers of two-car units elsewhere, in Hampshire two are required for only some of the passengers? And why, in the Hastings line second-class, are the seat backs cut lower than has been customary in suburban trains, let alone comparable main line stock, providing a headrest suitable only for dwarfs?—Yours faithfully,

CHARLES STUART.

Latimer, The Green, Ewell, Surrey.

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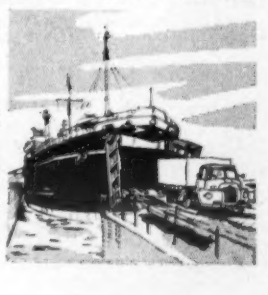

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FUEL ECONOMICS

For Public Road Transport

By A. T. WILFORD, A.R.C.S., B.Sc., F.R.I.C., F.S.S., C.I.Mech.E., F.Inst.Pet., Director of Research, London Transport Executive*

IN the British Transport Commission's annual report and accounts for 1956, Volume II—*Financial and Statistical Accounts*—there is a great amount of valuable information relating to the operations of the various organisations controlled by the Commission. Amongst other things, there are data concerning British Road Services and the road passenger services operated by the

FUEL COSTS IN RELATION TO TOTAL WORKING EXPENSES

	Fuel	Total Working Expenses	Fuel Costs expressed as percentage of Total Working Expenses
British Road Services	6,561,240*	46,724,120	14.0
Tilling Group	5,355,021*	35,459,653	15.1
Scottish Group	3,019,151*	16,704,703	18.0
London Transport	5,831,377†	44,408,869	13.1

*Petrol and Derv †Derv only

Tilling Group, the Scottish Group and London Transport. A table is derived from this source, and shows the fuel costs in relation to working expenses for each of these four undertakings.

High Incidence of Tax

The remarks which follow will be mainly related to London Transport experience, but their more general application will be obvious. It is estimated that the London Transport fuel bill for 1958 will be approximately £5.9 million, and taking the price of derv fuel in bulk at 3s. 10d. per gal., it can be readily shown that very nearly £3.9 million will represent tax, the remaining £2 million being the basic cost of fuel. It is also of interest to note that a change in price of ¼d. per gal. would correspond to a change of about £32,000 in the year's fuel bill. An increase in consumption due to a worsening of the mileage per gal. figure by 1 per cent would cost £59,000 for the year, of which £39,000 would represent tax.

Although continuous efforts are made to economise in the consumption of fuel, it is obvious that this cannot be the prime consideration of a road passenger undertaking which is required to provide a service to the public; nor of a goods vehicle operator, who is concerned with conveying a wide variety of commodities from place to place in the minimum practicable time. It is only within the framework of the routes and services that economies are possible. It is feasible, and of course highly desirable, to take advantage of changes in design, whether of the mechanical units or the body of the vehicle, which will lead to a reduction in fuel costs. But it is not possible to avoid operating in heavily congested and busy areas just because fuel consumption is likely to be excessive.

EXAMPLES OF ROUTE FUEL CONSUMPTION

(Double-deck buses—Central Area. Adjusted to 1955 "standard")

Route No.	Description	Fuel consumption miles per gal.
8A	Old Ford and London Bridge Station ..	8.0
9	Liverpool Street Station and Mortlake ..	8.6
13	London Bridge Station and Golders Green	8.8
25	Victoria Station and Becontree Heath ..	9.3
43	London Bridge and Friern Barnet ..	7.3
71	Brook Green and Kingston	11.6
112	Palmers Green and Ealing Broadway ..	10.0
183	Golders Green and Northwood	9.8
270	Kensington and Teddington	10.8
	Mean Fleet Consumption (all routes) ..	9.5

Variables

In a table of route variations in fuel consumption, it may be noted that the difference between the "easiest" and—with one exception—the "hardest" route amongst these few examples amounts to more than 45 per cent. Thus, buses operating on route 71 use nearly one-third less fuel than buses on route 8A for the same distance travelled. There is little or nothing that London Transport can do about this great variation, though this does not prevent us from making a close study of factors which affect fuel consumption.

The fuel consumption of an internal combustion engined vehicle is affected by a number of factors which can be grouped for convenience under the following headings:

(i) Vehicle characteristics (i.e. design of engine and other mechanical units, unladen weight, seating capacity, or, in the case of a goods vehicle, payload).
(ii) Overall vehicle efficiency.
(iii) Operating conditions, including passenger loading and standard of driving.
(iv) Weather conditions.
(v) Lubricating oil and fuel characteristics.

Vehicle Characteristics

The benefits obtained from the use of the high-speed compression ignition engine in place of a spark-ignition engine in public service and heavy goods vehicles are well known, and when the change was first made, now nearly 30 years ago, there was a reduction in fuel consumption approaching 50 per cent. At a later date the adoption of the direct injection design in place of the indirect injection engine resulted in a further 10 per cent saving in fuel. The high-speed diesel engine is more expensive in first cost than a petrol engine of equivalent output, but it is more robust and reliable, and it can be shown that with an annual mileage as low as 15,000, the running costs of a 6-ton lorry are at least £100 per annum lower than those of a similar petrol-driven vehicle.

Fuel consumption is also affected by the design of the transmission unit, and all London's buses and some provincial ones also are equipped with fluid flywheels and pre-selective gearboxes. We are well aware that this form of transmission increases our fuel consumption by not less than 5 per cent, but the expenditure on fuel is recouped by a corresponding reduction in maintenance costs compared with a clutch-driven transmission unit. Furthermore, the fluid transmission gives enhanced vehicle riding qualities, and in addition eases the job of the driver, a matter of considerable importance in the strenuous conditions which are encountered in driving buses in London traffic.

Overdrive Possibilities

An overdrive is amongst the mechanical features which can lead to a significant reduction in fuel consumption, though unfortunately not under London traffic conditions. The scope for the use of such a feature in buses operating on country routes is, however, under consideration. Fuel can also be saved by the use of an appropriate rear axle ratio, though here again with a large fleet of vehicles operating in urban areas the scope is somewhat restricted if full interchangeability of vehicles between routes is to be maintained. There is however more latitude for varying rear axle ratios to suit route conditions in the case of coaches and for buses operating in the country.

Fuel consumption is of course affected by the unladen weight of the vehicle. The effect of weight varies with speed and frequency of stopping and for a bus operating under average conditions of loading, speed and stopping in London, an increase of 1 ton in weight increases fuel consumption by 7.3 per cent, and vice versa. It will be appreciated therefore that much interest is being shown in light alloy construction. With a legal restriction on maximum laden weight, a reduction in unladen weight permits the use of a public service vehicle with increased seating capacity, or if it be a goods vehicle, increased payload. In such circumstances the fuel consumed may remain the same and the saving will appear in overall operating costs. London Transport's new RM bus, which is to replace the existing trolleybuses, will provide seats for 64 passengers and is confidently expected to yield a fuel consumption figure lower than that of the present RT bus which seats only 56.

Efficiency and Operating

It is perhaps sufficient to say under this heading that the full benefits of improvements aimed at reducing fuel consumption cannot be achieved unless the vehicle is maintained at a high standard of efficiency. It is therefore necessary to adopt a system of planned maintenance both at garages and at the central overhaul establishment. It is equally necessary to combine the system with adequate inspection to ensure that the various operations are carried out at the periods laid down and that the procedures are rigidly adhered to.

We now come to a group of factors which are largely outside the control of the operator, particularly if he is running an urban bus service. His first consideration must be to cater for the needs of the travelling public. It is therefore essential to provide a fleet of vehicles large enough to deal expeditiously with the morning and evening peaks. From the aspect of fuel consumption and from other aspects also, many of these vehicles will be inefficiently employed, as they will be called upon to perform short journeys carrying a full load in perhaps only one direction, while for a considerable proportion of the day some of them will be standing idle in the garages. The buses must run through the busiest thoroughfares to which the public wish to get to and away from. The fact that other vehicles, far outnumbering buses, also use these thoroughfares has to be accepted. As will be seen from the table below, buses in London constitute less than 7 per cent of the wheeled traffic. The proportion is even smaller if account is taken of the numbers of immobile vehicles parked at the sides of the streets. These conditions of working, which are imposed on the operator, are by no means compatible with economy in fuel consumption, but very much the reverse.

VEHICLES RECORDED AT 117 POINTS IN LONDON

Class of Vehicle	Number of each class as percentage of total
Private Cars	41.17
Light Commercial Vehicles	23.32
Taxi-cabs	7.63
Pedal Cycles	7.47
Buses	**6.70**
Heavy Commercial Vehicles	4.91
Solo Motor Cycles	4.56
Motor Cycle Combinations	1.34
Trolleybuses	0.94
Others	1.96
	100.00

Causes of m.p.g. Variations

The differences in fuel consumption between routes are due to a variety of causes and in some cases are a reflection of operation under conditions of peak traffic and loadings. This for example is the explanation of the unusually high consumption shown for route 43, on which buses are not operated after 7 p.m. In the main, however, the differences are attributable to differences in running speed (necessitated by the characteristics of the route), average loading and number of stops per mile, the last two being to some extent interrelated. Having regard to the limited range of speeds within which it is possible to operate in the London area, the number of stops per mile is a most important factor affecting fuel consumption, for on every occasion the vehicle is stopped, kinetic energy is lost and when restarting has to be regained by accelerating through the gears.

In the course of experimental work, we have accumulated much data on fuel consumption in relation to speed and frequency of stopping. Some interesting figures derived from carefully controlled tests carried out on the M.I.R.A. proving ground are tabulated. Average speed in this context corresponds to journey speed, i.e. it includes stops; it is not quite the same thing as scheduled speed, which includes layover times at terminal points. Stops were uniformly spaced, though this is not always so in actual service; stopping time was 10 sec. for each, a realistic mean figure.

FUEL CONSUMPTIONS AT AVERAGE SPEED OF 11 M.P.H.

Stops per mile	Fuel Consumption: Gallons per 100 miles (g.h.m.)	Miles per gallon (m.p.g.)
2	7.1	14.1
3	7.3	13.7
4	7.6	13.1
5	8.3	12.0
6	9.4	10.6
7	11.7	8.6

It will be seen that under these conditions of operation with an average speed of 11 m.p.h., fuel consumption with seven stops per mile was 65 per cent greater than with two stops per mile. On the other hand, it was also found in the same series of tests that if journey speed was reduced to 9 m.p.h., fuel consumption was at the rate of 10.9 m.p.g. for seven stops per mile, a decrease of 22 per cent compared with running at 11 m.p.h.

(To be continued)

* Abstract of a paper read to Institute of Petroleum, February 13.

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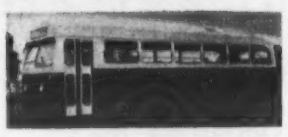
Olympic ER 44 53-seater for Durban Corporation

Olympic HR44 dual class bus for Rhodesia United Transport



Olympic HR44 of Salisbury (S. Rhodesia) United Transport

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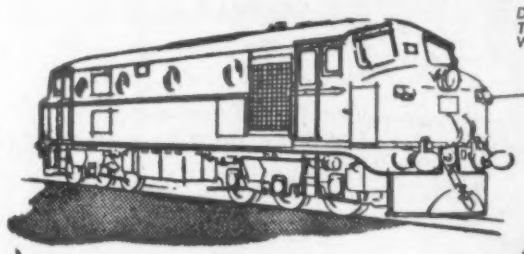
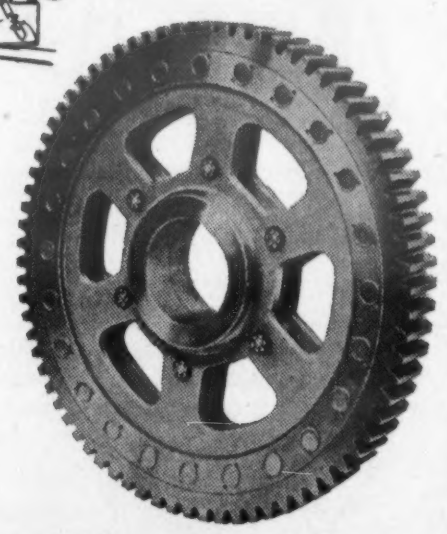
Diesel locomotive built by Messrs. Brush Traction Ltd., for Ceylon incorporating Wiseman resilient gear wheels.





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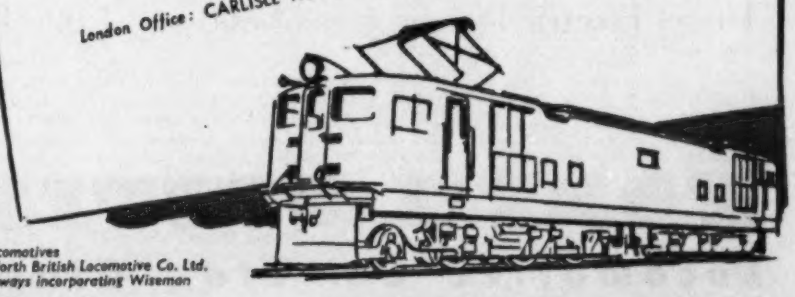
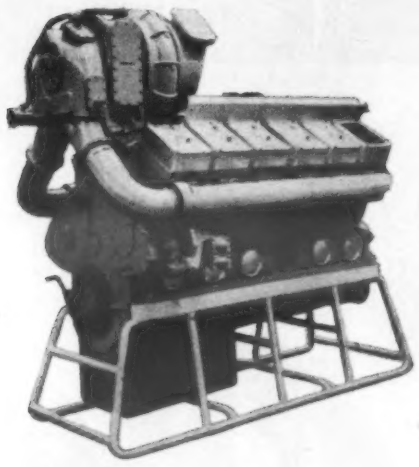


3030 H.P. Electric Locomotives supplied by Messrs. North British Locomotive Co. Ltd. for South African Railways incorporating Wiseman resilient gear wheels.

British Railways first Main Line Diesel Hydraulic Locomotive

The locomotive shown above is the first of the Class 4 (2,000 B.H.P.) Diesel-Hydraulic locomotives delivered to British Railways under the Modernisation Plan. It was built by North British Locomotive Co. Ltd., at their works in Glasgow, for service in the Western Region.



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NBL/MAN 1,100 B.H.P. Diesel Engine. Type L12V 18/21 BS.

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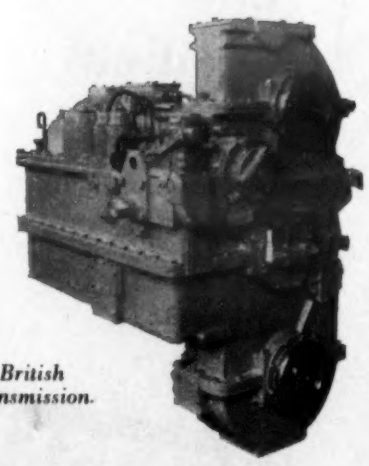


VOITH/North British Hydraulic Transmission. Type L306r.

In addition to these 2,000 B.H.P. locomotives, diesels on order from North British include 58 Diesel-Hydraulic type, of 1,000 B.H.P. and 48 Diesel Electric locomotives of 800 and 1,000 B.H.P.

NORTH BRITISH
Locomotive Co. Ltd., Glasgow

CONSULTING THE PASSENGER

Methods and Assessment of Their Value

By R. M. ROBBINS, M.Inst.T., Secretary and Chief Public Relations Officer, London Transport Executive*

THE assumption is sometimes made that the public is essentially unreasonable, miserly, unsociable, and given to grumbling. Many people do genuinely believe this, because "the public" is never the speaker, but always someone else. But one knows that in fact many individual members of the public are patient, public-spirited, sensible people who will pay the proper money for value received. The opinions of such people, at any rate, ought to be worth knowing. If our transport job is simply a case of selling something which can equally well be bought from another shop round the corner, then the figures tell all. But in most of public transport today, there is not another shop round the corner in the ordinary sense; and for railways there very rarely has been. A journey not made by one particular form of public transport is probably lost to public transport altogether.

Local authority ownership and operation of tramways did, even if indirectly, give passengers some say in the way those undertakings were run. The transport committee of laymen, however often deplored by the transport manager, did represent the public who were the passengers. If I may instance the London Passenger Transport Area, as it was constituted in 1933, I think there is clear evidence that the severing of this link with the public in the districts served up to that time by the tramways of the municipalities just outside the County of London led to a feeling in those parts that something valuable had gone.

Area Advisory Committees

In 1935 and 1936 the lack of such a channel of communication became particularly evident in certain areas, and some Members of Parliament concerned themselves with the frictions that were arising. With much wisdom, Mr. Frank Pick, vice-chairman of the Board, suggested that a standing traffic advisory committee should be formed for the area that was then comprised in the Romford Parliamentary constituency; and this has developed into the South Essex Traffic Advisory Committee. By the outbreak of war in 1939 similar committees were in existence also for South-West Essex and North-West Kent. These were and are composed of members of the councils concerned, with one of the town clerks as honorary secretary; officers of London Transport and of the British Railways Region concerned normally attend all meetings not as members but to inform and advise. In the county of Middlesex, a somewhat different form emerged, in that the county council (whose area lies in this case wholly within the London Transport area) is itself concerned, and the body is the traffic sub-committee of the county council highways committee, having on it representatives of the county council and of all borough and urban district councils within the county.

What can be said of the way these bodies, now some twenty years old, have proved to work? They were in the first place born of a grievance, and an early phase had to be gone through when the transport officers had to face, if not actual hostility, at any rate some lack of confidence. As experience has been gained, however—and here continuity in membership among the councils' representatives has been most valuable—the committees have come to understand that transport officers do know where particular stations, roads, even bus stops are situated, or where the new housing estates are going up, even before they are informed at the meetings—and in course of time they come to appreciate the inherent conditions which govern the provision of passenger transport, the rules of policy that the transport undertaking must obey, and the financial background to its operations.

Benefit to Operators

What benefit does the transport undertaking get from this kind of consultation? Does it do more than damp down the agitations of a pressure group, which might become dangerous, by channelling off complaints into a pointless and fatiguing committee discussion? I think there is more to it than this. I have indicated already that the discussions do spread a better understanding of problems and requirements on both sides. This benefits both the transport operator who gets the revenue and the inhabitants whose interests are served.

I am sure, therefore, that this kind of consultation is something that a passenger-carrying concern will be sensible to welcome. Generally speaking, it works best when it is a regular, continuing consultation, not just something produced ad hoc for a specific piece of trouble; when the members are representative of public elected bodies having experience of administration, and do not change too frequently; and when the area concerned is not confined to a single local government district, because transport is of its very nature rarely concerned with movements within such a small compass.

Staggered Hours

There can, however, sometimes be good reasons for making different arrangements when specific problems are concerned. The business of staggering hours of work in factories so as to ensure the most efficient provision of transport has been handled during and since the war of 1939-45 with great success by groups of industrial and transport representatives who deal directly with all transport problems in specified areas. This has been the most successful collaboration between the passenger and the transport operator so far devised.

A most interesting, and potentially a very valuable, means of dealing with the Inner London peak-hour problem is the staggered working hours committee set up by the Minister of Transport to secure by agreement variations in working hours away from the maximum peak traffic period. Again, a different kind of body has been set up in the new towns of Stevenage, Harlow, and Hemel Hempstead, where transport consultative (or advisory) committees, including representatives of the local councils and (at Hemel Hempstead) the New Town Development Corporation and also of local bodies such as ratepayers' and residents' associations, chambers of trade, and the like, meet London Transport and railway officers, with advantage.

At the top of the edifice of formal consultation there is, of course, the statutory network of the Central Transport Consultative Committee and the area Transport Users' Consultative Committees. But precisely because these are at the top, they are naturally dealing with matters that, though they may specifically refer to some particular local application, are generally applications of broad transport policy, even of national policy; for this reason I do not mean to do more than mention them here. On these bodies, the public's representatives are nominated by the Minister of Transport and Civil Aviation—there is no other way of selecting them; it is impossible to say how far the public accept them as being representative; but I am sure that it is now a built-in part of the national transport system which has proved its value and has come to stay.

The passenger thinks that the monopoly structure of the industry gives him a right to be consulted. There is, the public believes, a positive obligation. Certain economists may treat the notion of public obligation rather airily as something that the lazy transport administrator relies on to save him from the trouble of running his concern economically; but any operator who has lived with it knows that the obligation, whatever exactly it may be, to the public is always there sitting on his shoulder. The public, in short, knows it has a right to be consulted, and unless the provider of transport is willing to tell the public that it has no such right, then he had better be prepared to consult his passenger, and like it.

Sampling the Views of Passengers

It would be wrong to overlook several other means of consultation which have been and are being used. There was, for example, the public opinion survey which the London and North Eastern Railway carried out in main-line trains in 1946 and 1947; there are British Railways' soundings of opinion about the new rolling stock of which prototypes are in service; and in a modest way London Transport invites the passenger on the prototype RM bus and coach to express his view about it. There are at least two important limitations on the value of such information.

First, is the opinion genuinely representative and if so, what proportion of all the passengers concerned, if the proposal were adopted, have expressed their view? Second, is this a question which really can be settled by public preference? To decide whether a person or a group really is representative needs skill and experience. Too often the views of individuals or groups with the loudest voices are adopted by bodies which should be fully representative.

Another question is closely linked with this one: If this is done to help A, are B and C and D put to a disadvantage? When one set of people who genuinely and sometimes bitterly resent lack of service just when they want it are given what they ask for, it may upset a far greater number of people who were unaware of the issue when it was raised, and so do widespread damage. All this means that a knowledge of particular public desires does not necessarily settle any question for management; it becomes a factor—and an important one—in the equation to be solved.

Dangers

Consultation, in short, can only be of value where there is a genuine choice of courses open; it is useless, and leads to eventual disappointment and suspicion of bad faith, to discuss a proposal which in the end the management is going to declare impracticable for technical or financial reasons. It is the management's right and duty to decide this preliminary point, and both parties must go into consultation accepting this fact. I cannot emphasise this point too strongly; and I must add that, as the financial position of public transport undertakings becomes weaker, in the way it has been doing of recent years, and as long as they are required to stand on their own feet financially, so the choices genuinely open to them become more limited.

So far I have dealt entirely with consultation as it affects passengers who volunteer their opinions, or answer inquiries which are put to them. But there is another group—in numbers, I suppose, very much larger—which does not volunteer any opinion, and prefers not to answer inquiries. It is possible that the opinions or prejudices of these people are really the ones we need most to discover. After all, these are the people who are most fluid, the marginal consumers whose tastes and unexpressed likings we ought to be studying most closely. You may grant that the opinions of these indifferent, unattached people would be interesting if they were obtained; but is it possible to do so?

Market and Consumer Research

There are really two separate things here. One is what is usually known as market research; this is an attempt to estimate the future behaviour of the market for anything—in this case traffic—by reference to all the probable influences which will produce trends up or down. Then there is the second, more developed, type of inquiry commonly called the consumer research; this brings in consumers' preferences and their motives for choosing one product rather than another. This of course takes the inquiry on to personal, subjective ground.

A very modest start in this type of survey was made by London Transport early in 1957. When fuel rationing was in force the bus and coach services were able to operate relatively freely because traffic congestion was so greatly reduced, and their running performance and regularity were in consequence immensely improved. A small pilot survey was undertaken to discover if possible how far this improvement had been noticed by the travelling public and whether it was influencing their decisions about travel. Fuel rationing ended too soon for a full survey to be undertaken, and the results from the pilot, taken in Hendon and Camberwell, were rather inconclusive.

Since I began to prepare this paper, I have learned of a most interesting and promising project under consideration by one of the regions of British Railways for a similar but more comprehensive survey. This will try to get behind the conventional business of listening to complaints and suggestions and weighing them as judiciously as experience or flair will allow. Success of the great railway modernisation plan, as its sponsors readily agree, depends on a number of assumptions about future traffic being fulfilled. It must be wise, as the development of the plan proceeds, to find out whether the public, which is ultimately the railways' only paymaster, is really going to be offered what it wants to buy.

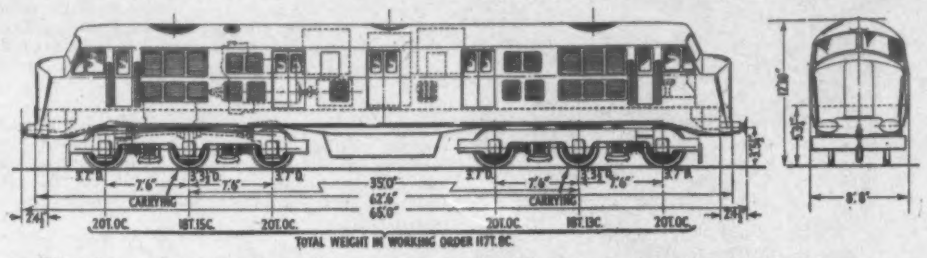
* Abstract of a paper to the Railway Students' Association on February 19.

DIESEL-HYDRAULIC LOCOMOTIVES

North British Units for Western Region

M.A.N. ENGINE AND VOITH TRANSMISSION

AS already announced in our columns the Western Region of British Railways is embarking upon an extensive scheme for the complete replacement of steam by diesel traction on the lines between Newton Abbot and Penzance, including all freight and passenger services, and, initially, on many of the through trains between Paddington and Bristol and the West of England. This programme involves the replacement of over 200 steam locomotives by about 130 diesel-hydraulic main-line locomotives, comprising five of 2,000 h.p. from the North British Locomotive Co., Limited; 58 of 1,000 h.p. from North British; 33 of 2,000 h.p. from Swindon Works; and 34 of 2,000 h.p. for which orders have still to be placed. This is the first application of diesel-hydraulic transmission to main-line traction in this country; locomotives of this type are giving satisfactory service on the German Federal Railways.



Elevation and end drawings of the Western Region Warship class diesel-hydraulic locomotive supplied by the North British Locomotive Company

The new locomotives are being designed and constructed to the general requirements of the British Transport Commission under the overall direction of Mr. R. C. Bond, chief mechanical engineer, British Railways Central Staff. Mr. R. A. Smeddle, chief mechanical and electrical engineer, Western Region, is responsible for the detailed design and construction of the locomotives to be built at Swindon, and for collaboration with the manufacturers and for inspection of the contract-built units.

The Diesel-hydraulic System

In the diesel-hydraulic locomotive, the transmission consists of an oil-filled torque converter interposed between the crankshaft of the diesel engine and the gearbox (if fitted), or, alternatively, two or more converters are used instead of a gearbox. The torque converter comprises three basic parts: the centrifugal pump, or impeller, driven by the engine; the turbine or output member, fixed to the output shaft which drives the wheels through gearing; and the fixed guide wheel or stator; all are mounted coaxially, and contained in an oil-filled casing.

The input (engine) shaft turns the impeller whose blades force the oil (by centrifugal force) on to the blades of the turbine (fixed to the output-shaft) imparting a torque which makes it rotate. The oil then passes to the vanes of the fixed guide wheel which divert it back to the impeller-blades. The oil is continually circulating while the torque converter is in use. The converter is so designed that the torque transmitted to the turbine rises as the turbine speed drops. Hence the torque converter is ideally suited to the well-known locomotive requirement that the lower the speed the greater must be the pulling power. It provides over the whole power range a smooth, shock-free drive.

The first diesel-hydraulic locomotive to be brought into use on the Western Region is a North British-built 2,000-h.p. type, numbered D600 and bearing the name *Active*. Subsequent locomotives of this type built by the North British Locomotive Company will also be named after warships, the four following *Active* being *Ark Royal, Bulldog, Conquest* and *Cossack*.

Multiple-unit Locomotive

The locomotives, which are classified as B.R. type 4, are for express working and have an A1A-A1A wheel arrangement. They will operate in multiple with each other. The main frame of the locomotive is constructed from mild steel plates and sections; the main longitudinal members are built up to form an I section and are braced by cross-stretchers. Plates and channels complete the framework on top of which the platform is built to form a continuous floor. Standard side buffers and drawgear are fitted at each end of the locomotive together with connections for carriage warming and vacuum train pipe. Jumper sockets are provided at each end for the multiple-unit operation.

Length over buffers	65 ft.
Weight in working order	117 tons 8 cwt.
Fuel capacity	800 gal.
Water capacity	1,000 gal
Maximum speed	90 m.p.h.
Maximum tractive effort (30 per cent adhn. and continuous rating	50,000 lb.
Driving wheel, dia.	3 ft. 7 in.
Carrying wheel, dia.	3 ft. 3⅛ in.
Bogie wheelbase	15 ft.

The six-wheel bogies are of double-plate design with sub-assemblies which are welded and stress relieved. Traction, braking and transverse forces are taken by an inner and outer centring ring. The inner part of the ring is attached to the under frame; the outer part is integral with the bolster. The total weight of the main frame and superstructure is taken by four widely spaced bearing pads which rest on a double swing link bolster. The bolster in turn rests on the transverse laminated springs supported from the bogie frames by spring link planks and swing links. From the bogie frame the load is transferred to the grease-lubricated Timken roller-bearing axleboxes by a system of beams and coil springs. There are manganese steel liners on axlebox and hornface guides.

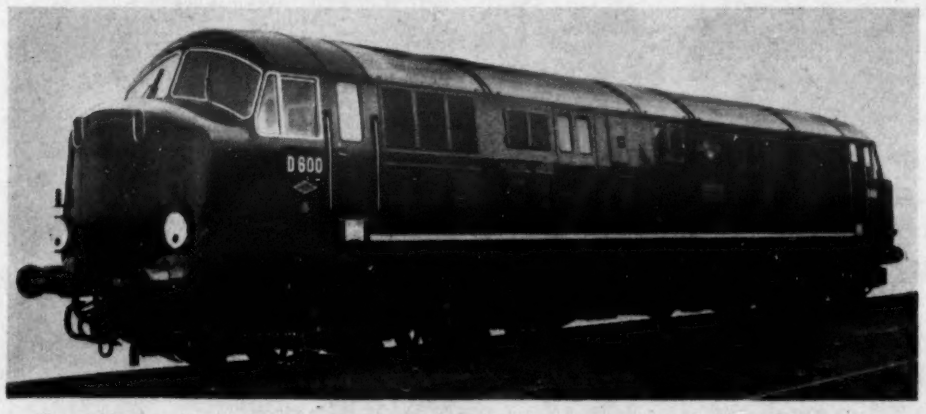
Engine

The two N.B.L.-M.A.N. L12V 18-21S 12-cylinder type engines are each pressure charged by Napier exhaust gas turbo-blowers. The engines are mounted on bedplates which are flexibly mounted to the underframe. Connection of the engine to its transmission is through a Hardy Spicer cardan-shaft. The cylinder banks are at 60 deg. with the cylinders staggered to allow for side-by-side connecting rods on each crank. The wet-type cylinder liners are of cast-iron, located in place by individual cast-iron cylinder heads, and are free to expand downwards, being fitted with rubber sealing rings at the lower end. The crankcase is of a fabricated steel construction incorporating seven cast steel bulkheads carrying the main bearing housings. The two cylinder blocks are welded to the main crankcase frame and are constructed from formed steel plates. The banks are joined at the top by a steel platform which carries the monobloc fuel pumps and governor. To relieve the stresses set up in the cylinder blocks, tie bolts are fitted and extend from the top of the blocks into the cast steel bulkheads. The crankshaft is made from alloy steel forging hardened and ground, the crank webs being drilled to allow an oil flow from the main bearings to the crankpin bearings.

DIESEL-HYDRAULIC MAIN-LINE LOCOMOTIVES FOR WESTERN REGION

Number of Locos	*B.R. Running Numbers*	*B.R. Type*	*Wheel Arrangement*	*H.P.*	*Main Builders*	*Suppliers of Diesel Engines*	*Suppliers of Transmissions*
6	D.6300-D.6305	2	BB	1,000	N.B.L.	N.B.L./M.A.N.	N.B.L./Voith
5	D. 600-D. 604	4	A1A-A1A	2,000	N.B.L.	N.B.L./M.A.N.	N.B.L./Voith
3	D. 800-D. 802	4	BB	2,000	B.R.S.W.	Maybach	Mekydro
52	D.6306-D.6357	2	BB	1,000	N.B.L.	N.B.L./M.A.N.	N.B.L./Voith
30	D. 803-D. 832	4	BB	2 2,000	B.R.S.W.	Maybach	Mekydro
34	—	4	—	—	—	—	—

N.B.L. = The North British Locomotive Co., Limited.
B.R.S.W. = British Railways' Swindon Works.



The 2,000-h.p. North British-M.A.N. diesel-hydraulic locomotive with Voith transmission for the Western Region of British Railways

Individual cylinder heads are fitted each with two inlet and two exhaust valves, a fuel injector and a pre-combustion chamber.

The valves on each bank are operated by a crankshaft situated between the two banks, the camshaft being positively driven by a spur gear wheel. The gear drive to the tandem fuel pumps is taken from the free end of the camshaft. The connecting rods are one-piece forgings of alloy steel with a copper-lead steel-backed bearing at the large end and a phosphor-bronze bush at the small end. Oil is carried from the big end to the small end by a centrally drilled oil hole. Exhaust manifolds from the engine connect with the Napier pressure charger inlet, and the output from the pressure charger is ducted through the roof. The hydraulic-boosted governor is gear driven from the crankshaft and electro-pneumatic remote control gear gives seven speed steps from idling to full load. Engine lubrication is primed from a pump driven by an electric motor which cuts out when the engine starts as the oil pressure switch closes and operates the dynostarter motor contactor.

(To be continued)

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[Other Classified Advertisements appear on page 16]

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LIGHT ALLOY CONTAINERS

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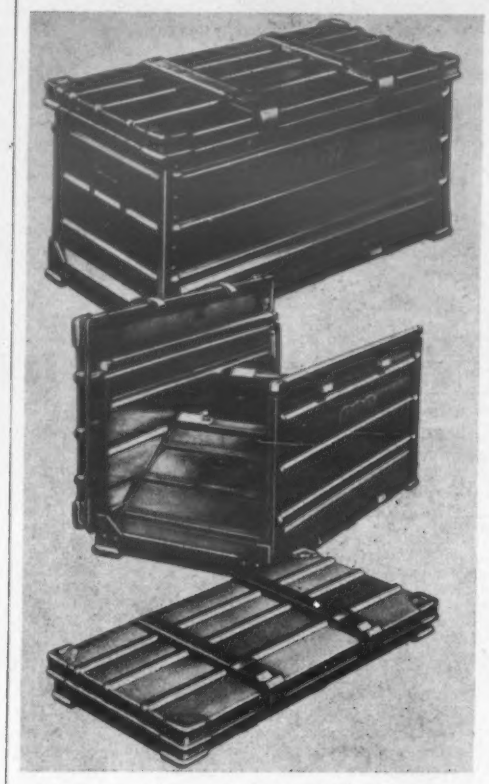
RECENTLY the Tracon "unexpendable" collapsible metal container was demonstrated in London by Tracons, Limited, of Mowden Hall, Darlington, Co. Durham, and 5A Deans Yard, S.W.1. Made of specially toughened aluminium alloy with hardened steel corners they are intended to withstand years of rough handling. They can be collapsed into one-fifth of their box dimensions in a matter of seconds by unlatching the lid, raising the sides and lowering the retaining clips. Alternatively one side can be



Tracon container and the stages of collapsing it for storage

lowered to facilitate packing. The sides and ends are ribbed for strength; moreover, the hinges are continuous along the length of the container making it difficult for wrenching to take place. Fastenings are riveted on and the locked container becomes very resistant to pilferage.

The makers may well claim for Tracon that no box-making machinery or skilled labour is required. Neither is hammering, nailing, sawing or the cutting of steel strapping. There are no loose sides to go astray nor loose boards to tempt a man seeking firewood or some timber for a

(*Continued at foot of next column*)

FRENCH RAILWAYS

Locomotive Tests

LAST week the French Railways carried out high-speed trials on the 25,000-volt 50-cycle electric line between Strasbourg and Basle, using a six-coach train hauled by one of the new series BB 16000 locomotives. This is an 84-ton electric type with a one-hour rating of 4,280 h.p. The 24 units of this class which are now on order will eventually operate between Paris and Lille upon electrification of that line.

The 87 miles between Strasbourg and Basle were covered in 68 minutes, or an average of 76.7 m.p.h.; a maximum speed of 90 m.p.h. was not exceeded. At present the fastest train on this route is the northbound *Edelweiss* TEE-Express which takes 81 min., equivalent to 64.4 m.p.h.

The National Benzole Co., Limited, has appointed Mr. G. H. Harrison its Lincoln district manager, Mr. W. A. Walmsley Cambridge district manager and Mr. H. Cole Ipswich district manager.

Technical circulars dealing with electrodes and special techniques that can be used to combat porosity in welding are available from Quasi-Arc, Limited, Bilston, Staffs.

Descriptive literature is available from Barimar, Limited, 22-24 Peterborough Road, Fulham, London, S.W.6, on the Barimar on-site metal-splicing process for repairing damaged machinery of all types.

Mr. F. Graucob, managing director of Nu-Swift, Limited, on his arrival in England from a tour covering several important Continental markets, has confirmed that Nu-Swift's exports in 1957 exceeded £250,000. Home sales were also an all-time record.

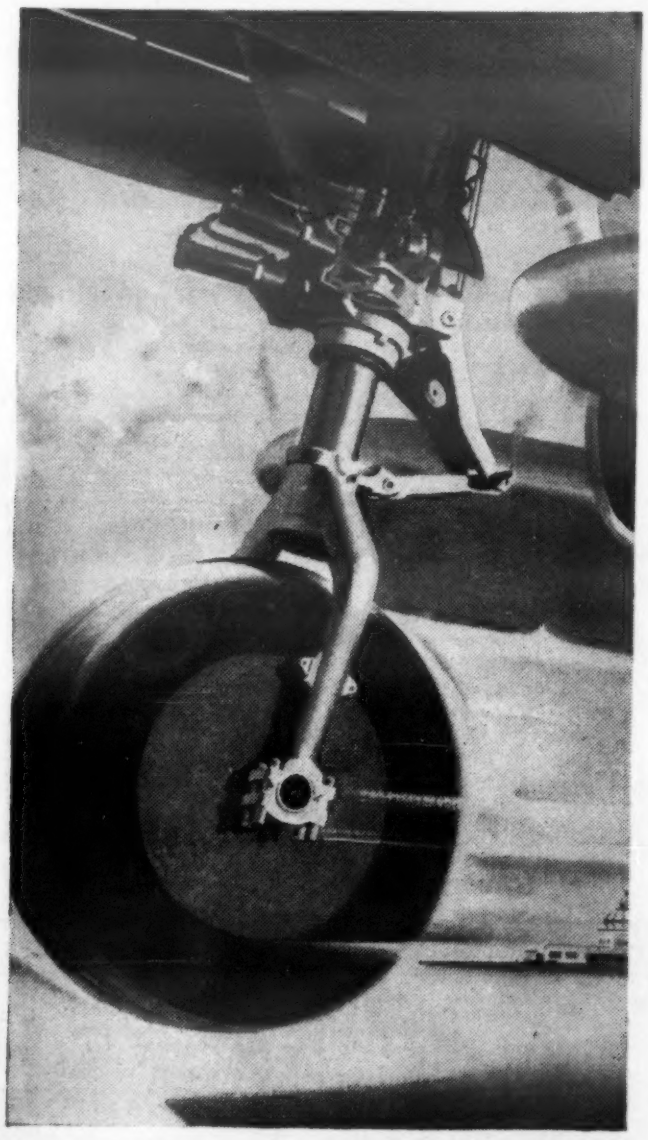
British Insulated Callender's Construction Co., Limited, announces that the address of its Glasgow office is now 110A Maxwell Avenue, Westerton, Bearsden, Glasgow. The new telephone number is Bearsden 2382. The telephone number of the company's Aberdeen branch office has been changed to Aberdeen 53351.

(*Continued from previous column*)

handicraft exercise. The metal does not corrode and all in all it is not surprising that an insurance broker has offered a comprehensive all-risks insurance at a specially low rate, about half what would normally be required.

The standard sizes are FK36, 24 in. long by 12 in. broad and 12 in. high, for 2 cu. ft. or 220-lb. capacity, with a tare of 14 lb.; FK48, 32 in. by 16 in. by 16 in., giving 4½ cu. ft. and 330-lb. capacity, tare 30 lb.; FK51, 42 in. by 20 in. by 20 in., giving 9 cu. ft., and 330-lb. capacity, tare 55 lb.; and FK62, 50 in. by 24 in. by 24 in., 16½ cu. ft., and 330-lb. capacity, having a tare of 62 lb. All these can be hired at low standard rates.

Light Alloy Construction, Limited, of the same addresses, provides a range of bins, pallet containers and handling trolleys highly suitable to factory or distribution depot transport purposes.



ALUMINIUM AT WORK

. . . from the familiar to the less familiar . . .

Touch-down . . . . . sixty tons of metal and power approach the runway at over 100 m.p.h. As wheel meets concrete, aluminium takes the strain: forged aluminium undercarriage legs, on which depend the safety of aircraft and their passengers all over the world. Dependable strength has long made aluminium the familiar metal of the air. And now designers and engineers are fast discovering its usefulness in every other transport field. Wherever saving in weight means increased payload or reduced power needs —wherever durability and long life can cut replacement and maintenance costs, there is an overwhelming argument for putting aluminium to work.

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SOCIAL AND PERSONAL

Retired Railway Officers' Society

AT the recent annual general meeting of the Retired Railway Officers' Society testimony to the members' appreciation of his 10 years' hon. secretaryship was made by the presentation of a cheque to Mr. F. E. Cox, who joined the Society in 1948 on his retirement from the position of general assistant to chief engineer, L.M.S.R. Only one hon. secretary had served for so long a period—the late Mr. E. B. Ivatts, from 1901 to 1911. Mr. Cox is succeeded by Mr. J. W. Kerr, formerly treasurer, London Midland Region, British Railways. Mr. J. H. Laundy was re-elected hon. treasurer and Messrs. F. H. Sedgwick and J. T. Drinkwater joint hon. auditors. The chair was occupied by the retiring president, Mr. George Morton, C.B.E., M.Inst.T., formerly chief financial officer to the Railway Executive, who was the recipient of a unanimous vote of thanks; his successor for the ensuing year is Mr. H. G. Rampling, formerly district operating superintendent, Norwich, L.N.E.R. At December 31, the Society had a record membership of 186.

* * *

We regret to record the death of Mr. Frederick Plaxton, founder of Plaxtons (Scarborough), Limited, Scarborough. Mr. Plaxton was 81.

* * *

We record with regret the death of Mr. T. E. Short, proprietor of the Halifax road haulage company bearing his name. He was 82.

* * *

Mr. S. C. Tapley and Mr. I. J. H. Richardson have been appointed joint assistant general managers of the Clayton Dewandre Co., Limited.

* * *

The Municipal Passenger Transport Association is holding its annual conference this year at Blackpool during the week commencing September 8. The annual dinner will be held on September 11.

* * *

We record with regret the death of Mr. W. G. Barnett, former chief engineer and acting general manager of the Great Indian Peninsular Railway in India. He was 89.

* * *

The 1958 annual convention of the Institution of Railway Signal Engineers will be held in Copenhagen, May 15 to 20, and visits will include inspection of c.t.c equipment in the Odense area and the works of the Dansk Signal Industri in Copenhagen.

* * *

Mr. Alfred T. Moseley is relinquishing the general managership of W. S. Yates, Limited, the Loughborough coachbuilding firm, but will remain a director. It is understood he is to join Oliver's Luxicoaches, Limited, Loughborough, of which his son is managing director.

* * *

The annual general meeting of the Railway and Canal Historical Society will be held in London on April 26 after a visit to the Surrey Iron and Croydon, Merstham and Godstone railway sites. A Grand Union Canal visit will be made by members on the following day.

* * *

The annual dinner of Crewe Pupils and Apprentices Association, past and present Crewe pupils, premium apprentices and engineering apprentices, is being revived. The 50th dinner was held at Crewe in 1953; otherwise, and apart from interruptions due to two wars, the tradition goes back some 70 years. The 51st dinner is to be held at the Royal Automobile Club, Pall Mall, on March 21.

* * *

The annual general meeting of the Transport Golfing Society (London Area) is to be held at the Connaught Rooms on March 21. It will be preceded by the annual luncheon of the Society, which has been arranged for 12.15 for 12.45 p.m. It will be proposed that Mr. Dai Rees, while continuing as honorary professional of the Society, shall also be elected an honorary member.

* * *

Mr. R. W. Jackson, announced as district commercial manager, Edinburgh, Scottish Region, B.R., joined the former North Eastern Railway in 1921, and subsequently was in the office of the district passenger manager, Newcastle upon Tyne, and occupied positions in the headquarters and district offices at York. In 1945 he became deputy chief controller at Darlington and two years later was appointed assistant to district operating superintendent, Burntisland. In 1948 he returned to Darlington as goods agent and yardmaster and in 1952 was promoted to the position of assistant to district operating superintendent, Darlington. A year later he was appointed chief freight trains clerk for the Scottish Region and in 1955, became freight trains assistant to the chief operating superintendent. In September, 1956, Mr. Jackson was appointed district traffic superintendent, Ayr.

Mr. R. W. Jackson

* * *

Mr. C. H. Jones, assistant to regional accountant, London Midland Region, Euston, has become assistant regional accountant, Southern Region, B.R., vice Mr. R. W. Kemp, retiring.

* * *

We regret to record the death at the age of 68 of Mr. H. J. Comber, who was chief officer for labour and establishment, London Midland Region, B.R., and its predecessor the L.M.S.R., from 1943 to his retirement in 1950.

* * *

The appointment of Mr. S. F. Greene as general secretary of the National Union of Railwaymen is announced. Mr. Greene, who is 47, has been acting general secretary of the union since the death of Mr. J. S. Campbell after a road accident in Russia in November. The new president is Mr. Charles W. Evans, aged 52, a goods worker at King's Cross, who has been a member of the union's executive for the past two years.

* * *

Mr. W. J. W. Proctor, sales directer of Follsain-Wycliffe Foundries, Limited, will be visiting Johannesburg and district, after which he will make a comprehensive sales survey tour of North and South Rhodesia and to appoint agents to handle heat and abrasion resisting castings and variable speed gearboxes and speed reducers manufactured by the subsidiary, Varatio-Strateline Gears, Limited. Mr. Proctor arrived in Johannesburgh at the end of February.

Mr. C. G. Palmer has been appointed motive power officer in the office of the Great Northern line traffic manager, Eastern Region, B.R.

* * *

A course of six lectures on the "Railways of Southern England" is to be given by Mr. Edwin Course at the Railway Enthusiasts Club Room, Farnborough, Hants, on Thursdays at 7.30 p.m. commencing April 10.

* * *

For its Continental tour this year, the Southern Region Lecture and Debating Society is visiting Austria, from May 23 to June 2. Salzburg will be a centre for sightseeing, but in Vienna the party will hope to inspect the Vienna Stadtbahn (local elevated and underground railways) and the Vienna Sud Station of the Austrian Federal Railways.

* * *

The annual dinner of the South Wales and Monmouthshire section of the Institute of Transport took place at the Royal Hotel, Cardiff, on February 19. Mr. A. B. B. Valentine (past president), in the absence through indisposition of the president, Sir Reginald Wilson, responded to the toast "The Institute of Transport" proposed by Mr. G. R. H. Nugent, Parliamentary Secretary, Ministry of Transport. The toast "Our Guests" was proposed by Mr. B. Griffiths, and Lord Raglan, Lord Lieutenant of Monmouthshire, responded. The chairman of the section, Mr. C. R. Hodgson, presided.

* * *

Prizes in the North Eastern Region Amateur Boxing Association 24th annual championships were presented by Mr. T. H. Summerson, chairman of the North Eastern Area Board, and the Lord Mayor of York, Alderman E. L. Keld. The finalists were: bantamweight, W. Appleby, apprentice riveter, Shildon; light-middleweight, D. Bower, carriage cleaner, Copley Hill; lightweight, W. Nimmo, driver, carriage and wagon department, Shildon; light-welterweight, C. Raine, apprentice riveter, Shildon; and middleweight, J. Ofori, shunter, Hull. The national semi-finals between the champions of the six regions of British Railways will be held in the Railway Institute gymnasium at York on April 18.

* * *

During 1958, the following Institute of Transport scholarships will be offered for award:

One C.M.U.A. road transport research fellowship, value up to £600 to enable a British subject, over 30 years of age, engaged in road transport in Great Britain and Northern Ireland, to examine and report on road transport arrangements abroad.

Three Henry Spurrier memorial scholarships of an aggregate value of £750 to facilitate travel, research or study concerned with road transport.

One Sir William Chamberlain memorial scholarship, value up to £250, to facilitate travel, research or study concerned with road transport by a person engaged or intending to be engaged in road transport in the counties of Lancashire, Cheshire, Cumberland and Westmorland.

One silver jubilee scholarship, value up to £150, to assist a member of the Institute to travel for the purpose of studying transport or to undertake research or full-time education.

Further particulars and application for entry forms are invited. The closing date for the receipt of all entries is May 31.

* * *

The London Midland Region of British Railways announces the following appointments:

Mr. J. S. Wyatt to be principal assistant architect, chief civil engineer's office, Euston.

Mr. A. R. Jackson to be assistant (electrification works) (modernisation section), chief civil engineer's office, Euston.

Mr. L. H. Colebourne to be assistant (productivity and work study section), operating officer's office, Euston.

Mr. G. T. E. Wilson to be assistant (works section), (modernisation), chief civil engineer's office, Euston.

Mr. S. Grunberg to be assistant (works section) (modernisation), chief civil engineer's office, Euston.

Mr. F. Bateman to be traffic assistant to divisional traffic manager, Manchester.

Mr. T. H. Eynstone to be redesignated assistant district traffic superintendent, Barrow.

Mr. H. Pargiter to be redesignated assistant district traffic superintendent (commercial), Barrow.

Mr. J. L. Evans to be redesignated assistant district traffic superintendent, Stoke.

Mr. R. M. W. Ellson to be redesignated assistant district traffic superintendent (passenger commercial), Stoke.

Mr. H. G. Bill to be assistant district engineer, Walsall.

* * *

Mr. F. J. Norris, M.Inst.T., who was recently appointed staff and establishment officer, British Transport Docks, commenced his career in 1917 with the Port of London Authority, gaining practical experience of port working and administration: he later specialised in staffing problems and for a number of years prior to the war he served under the establishment officer. At the end of 1941 he was seconded to the headquarters of the then National Dock Labour Corporation and assisted in the introduction of dock labour schemes and their administration. In 1943 the Corporation appointed him area manager for the ports of Hull and Goole. He served in that capacity until 1949 when he became staff and establishment officer to the Docks and Inland Waterways Executive. When separate administrations for docks and waterways were set up in January, 1955, Mr. Norris became responsible for all staff and labour matters of British Transport Waterways, serving on the National Joint Councils for the salaried and wages staffs of that organisation.

Mr. F. J. Norris

* * *

Commodore C. E. Pollitt of the P. and O. fleet will retire on March 4, it is announced.

* * *

Mr. Bryan Dutfield, sales director of Rawlings Manufacturing Co., Limited, accompanied by Colonel Peter Cox, chief sales executive, recently returned from a successful tour of East, Central and South Africa, and is making a two weeks visit this month to customers in Scandinavia.

* * *

A meeting of the Société des Ingénieurs Civils de France will be held jointly with the Institute of Transport at 80 Portland Place, W.1, on March 5, when Monsieur Pierre Weil, chief public relations and Press officer of French Railways, will present a paper "The Latest Developments and Future Prospects of the S.N.C.F."

* * *

The annual general meeting of the Railway Correspondence and Travel Society is being held in London on March 1. The annual dinner is to be held at *Windsor Castle* by Victoria Station, London, on April 26. The principal guests will be Mr. R. F. Hanks, chairman, Western Area Board, and Mr. L. M. Sayers, assistant general manager, London Midland Region. A London River rail tour will be held between London Bridge and Liverpool Street on March 29.

after extensive tests and trials

Stewarts & Lloyds Limited state that the Brush-Traction Diesel-Electric Locomotives supplied over twelve months ago for shunting services in the integrated Iron and Steel Works at Corby are giving very satisfactory service.

Brush Traction Locomotives, recognised for their performance under the most arduous conditions, are also giving outstanding service to the Steel Company of Wales; Consett Iron Co.; Lever Bros.; and other large industrial users.

BRUSH TRACTION

Illustrated above is a 060 Diesel-Electric Shunting Locomotive of 400 H.P. made by Brush Traction Ltd.

Visit Stand No. D6
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Diesel-Electric Shunting Locomotives

—the logical choice

Write for literature on Diesel-Electric Shunting Locomotives to:
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A Member of the Hawker Siddeley Group

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For the Euston—Watford Line

Hoffmann Roller Bearing Axleboxes have been chosen for the 57 three coach multi-units to operate on the Euston-Watford and Broad St. - Richmond services London Midland Region.

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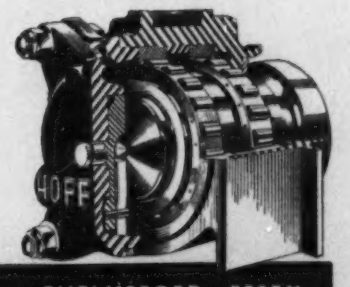
ROLLER BEARING
AXLEBOXES
ALWAYS RUN COOL



THE HOFFMANN MANUFACTURING CO. LTD., CHELMSFORD, ESSEX

CLASSIFIED ADVERTISEMENTS

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GENERAL CHEMICALS DIVISION

has a vacancy for an

ASSISTANT TRANSPORT ENGINEER

THE Division has large fleets of both road and rail tankers which deliver a wide variety of liquid chemicals. New and improved designs of vehicles and wagons are continually being produced in conjunction with manufacturers of this class of equipment. The design and development of a large proportion of the vehicles and equipment is worked out by the Division's own design and development staff at headquarters of the Division Transport Maintenance Department, which is located at Weston Point, Runcorn, Cheshire.

The man appointed to this job will have an opportunity of obtaining design, development, operational and maintenance experience of a wide variety of transport equipment. Candidates should have a degree in engineering and, whilst previous experience would be an advantage, it is not essential.

Apply, quoting reference ATE 67 and giving full particulars to: Staff Manager, Imperial Chemical Industries, Limited, General Chemicals Division, Cunard Buildings, Liverpool, 3.

SITUATION VACANT

DRAUGHTSMAN required for London Office, preferably with experience in Diesel Rail Traction, but knowledge of Diesel Engine and heavy transmission installations essential. Five-day week, luncheon vouchers and pension scheme available. Apply in writing, stating experience to Box No. 3786, MODERN TRANSPORT, 3-16 Woburn Place, London, W.C.1.

FOR SALE BY TENDER

A.1. Exceptionally well situated freehold

PETROL FILLING STATION with VACANT BUNGALOW

on GREAT NORTH ROAD

STIBBINGTON, HUNTINGDONSHIRE

CLOSING DATE 17th MARCH, 1958

For further particulars and tender documents apply

Divisional Surveyor, 30 Harborne Road, Birmingham, 15. *Tel. No. Edgbaston 3841*

[Other Classified Advertisements on page 13]

IMPORTANT CONTRACTS

Shell Installs Large Computer

A HIGH-SPEED electronic computing system has been ordered by the Shell Petroleum Co., Limited, to solve complex mathematical problems which arise in the planning of economic activity. It will be installed in the London office and used for special calculations covering commercial aspects of all activities from exploration to marketing. Based on the Ferranti Mercury machine, with additional punched card, magnetic tape and high-speed printing units, the computing system will be one of the largest in the world to be used mainly for operational analysis and one of the fastest in Europe for electronic processing of data. The equipment will be able to store the equivalent of more than 60,000,000 decimal digits at a time and the computer itself will perform up to 16,000 individual operations per second. The new system is expected to be in full operation early in 1959.

Heenan Equipment for Karachi Airport

Heenan and Froude, Limited, is to supply a Heenan torque reactor stand to Pakistan International Airlines for Karachi Airport. The plant, which will be used initially for testing Rolls Royce Dart engines after overhaul, will be rated at 7,000 b.h.p. to meet possible future requirements.

British Insulators for S.A.R.

Among many large similar orders received recently by Doulton Industrial Porcelains, Limited, is one for more than 200,000 6-in. disc insulators for the South African Railways electrification scheme. The production of Doulton electrical porcelain insulators has expanded very greatly since the company completed a new insulator unit at Tamworth two years ago. The item for S.A.R. incorporates a patent device for preventing electrolytic action developed by British Insulated Callender's Cables, Limited.

Scottish Region Contracts

The following contracts have been placed by the Scottish Region of British Railways:

The International Furnace Equipment Co., Limited, Aldridge, for whitemetalling plant at Inverurie workshops.

Metropolitan-Vickers-G.R.S., Limited, London, for installation of electric colour-light signalling between Westerton and Bowling for Glasgow suburban electrification.

Murdoch Mackenzie, Limited, Motherwell, for widening and redecking bridge No. 83, Maybole, and alterations and site work for new centralised parcels depot at Eglington Street, Glasgow.

The Siemens and General Electric Railway Signal Co., Limited, Wembley, for electric signalling work and standby apparatus, Craiglockhart—Slateford new connecting line.

London Midland Region Contracts

The London Midland Region of British Railways announces the following contracts:

William Mulcaster and Co. (Contractors), Limited, Crewe, for diesel oil fuelling plant and examination and repair shop, Crewe.

Mechanised Contractors (London), Limited, London,, W.5, for formation renewal and drainage, Braunston and Willoughby to Rugby Central.

Demolition and Construction Co., Limited, London, S.W.1, for permanent way drainage at Carlisle Citadel Station.

Aerocem, Limited, London, W.1, for repairs to embankment on down fast line near Bedford.

The Butterley Co., Limited, Derby, for reconstruction of superstructure at bridge No. 5 at Acton.

Leonard Fairclough, Limited, Adlington, for 70-ft. dia. turntable and motive power depot, Heaton Mersey, and for formation renewal and drainage, Braunston and Willoughby to Staverton Road.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

March 6—Union of South Africa.—City Council of Johannesburg for 10, 20 or 30 150-b.h.p. diesel-engined (max. power at 6,000 ft.) two-axle SINGLE-DECK BUS CHASSIS and 30 ft. by 8 ft. 2½ in. BODIES for same, or alternatively single-deck INTEGRAL BUSES; 50, 60, 70 or 80 150-b.h.p. (max. power at 6,000 ft.) semi-full-fronted two-axle DOUBLE-DECK CHASSIS, suitable lightweight 8 ft. 2½ in. wide 85-passenger bodies; and 50, 60, 70 or 80 all-metal lightweight 8 ft. 2½ in. wide rear-entrance DOUBLE-DECK BODIES for 69 seated and 16 standing passengers. Tenders to the Town Clerk, City of Johannesburg, Room 108, First Floor, Municipal Offices, Johannesburg. (ESB/4362, 3 and 4/58.)

March 7—British East Africa.—Dar-Es-Salaam Municipal Council for six petrol-engined 10-cu. yd. REFUSE-COLLECTION VEHICLES, with crew cab, and four 1,000-gal. CESSPIT EMPTIERS. Tenders to the Town Clerk, Town Hall, Dar-Es-Salaam. (ESB/2247/58.)

March 7—Union of South Africa.—South African Railways for two 8-10 cu. yd. three-axle END-TIPPING LORRIES (quote extra cost of lockable third differential) or separately for chassis, bodies and tipping gear (less tyres, tubes and batteries); and 10 DRIVER'S INSTRUCTION BOOKS, 10 SPARE PARTS LISTS and 10 WORKSHOP MANUALS. Tenders, endorsed "Tender No. F.7063: Tipper Goods Vehicles," to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. (ESB/3882/58.)

March 7—Union of South Africa.—Transvaal Provincial Administration for 16 1,000-gal. motor WATER SPRINKLERS. Tenders to the Chairman, Transvaal Provincial Tender Board, P.O. Box 1040, Pretoria.

March 9—Iran.—State Railways Administration for 1,800 tons RAIL CHAIRS. Photocopies of tender documents from Export Services Branch, B.o.T., price 3s. (ESB/3259/58.)

March 10—Formosa.—International Co-operation Administration for eight 2-3 ton LORRIES with winch, derrick and spares, four ¼-ton PICK-UP TRUCKS and five 10-12 cwt. four-by-four UTILITY VEHICLES. Tenders to the Central Trust of China, Purchasing Department, 68 Yen Ping Nan Road, Taipei, Taiwan. (ESB/3851/58/ICA.)

★

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

Small and Parkes

A final ordinary dividend of 5 per cent and a bonus of 2½ per cent is to be distributed by Small and Parkes, Limited, making 12½ per cent for the year ended November 30 (same). Net profit £85,982 (£76,303) after deducting £83,500 (£82,600) for tax, and after crediting £25,718 (£2,615) profit on sales of fixed assets.

British Oxygen

The British Oxygen Co., Limited, reports that sales of most of its products again increased during the year at home and overseas. This growth in sales helped to counteract the continued heavy increase in operating expenses at all stages. Group trading profit after charging depreciation £3,217,463 (£2,610,299) was £5,964,085 (£5,198,464). U.K. and overseas taxation £3,215,099 (£2,699,611), leaving £3,358,624 (£3,002,543) available for distribution. General reserve £750,000 (£500,000), carried forward £1,060,737 (£918,379). Final dividend is 6 per cent on the ordinary stock (same) making total for year 10 per cent (same).

Charles Roberts: Hurst Nelson

Charles Roberts and Co., Limited, has made a bid for control of Hurst, Nelson and Co., Limited. Four 5s. ordinary shares in Charles Roberts, plus a cash payment of 5s., are offered for each £1 ordinary share in Hurst, Nelson. The latter directors propose to accept these terms in respect of their own holdings, and recommend other ordinary shareholders to accept. The offer is conditional on acceptance by the holders of not less than 90 per cent of the ordinary shares, or such lesser percentage not below 70 per cent as the directors of Charles Roberts may be willing to accept. If acceptance is unanimous, Charles Roberts will issue 1,600,000 additional 5s. ordinary shares, bringing the total issue of that class of capital to £1,400,000. The additional cash payment will be £100,000.

SHIPPING and SHIPBUILDING

Problems Facing Owners

DURING 1957, the shipping industry found itself "caught in an economic blizzard which grew in intensity as the year progressed," says the annual report of the Chamber of Shipping. For liners, it meant sailing with empty cargo space. For tramps, the slump in rates ranged over all the main commodity trades. For example, in December the rate for the carriage of coal from the United States to Europe was down to 25s. whereas a little more than 12 months earlier the figure was 118s. In the same period the rate for grain from Western Australia to the United Kingdom tumbled from 220s. to 72s. 6d. By January 1 this year, British ships laid up in U.K. ports totalled 375,026 tons gross, the highest postwar figure. Some means of meeting the tax-free competition of flags of convenience must be found, but so far a solution has eluded Governments, international organisations, and owners alike, says the report.

Larger Ships from Wear Yard

FOLLOWING lengthening of its berth for large vessels, J. L. Thompson and Sons, Limited, has laid the keel for the largest ship to be built on the Wear. This is one of three 34,500-ton tankers for the B.P. Tanker Co., Limited. The North Sands yard now has accommodation for ships exceeding 650 ft. in length. A 900-ft. berth is planned.

Coastwise Tramps Face Difficult Future

TRADING conditions which coasting tramp owners had had to face during the past twelve months had been, in common with other sections of the industry, the worst since the war, said Mr. W. F. Robertson at the annual meeting of the coasting and home trade tramp section of the Chamber of Shipping. The policy of mutual co-operation with merchants on freight rates had stood them in good stead and conditions would have been much worse had there not been stabilised rates, he added. Coasting tramp owners had established good relations with their charterers and had kept them supplied with tonnage during difficult periods in the past when the vessels could have earned much more elsewhere. Coastal shipowners relied on their co-operation during the months which lay ahead.

Runcorn Docks

THE £24,000 contract placed by the Bridgewater Department of the Manchester Ship Canal Company with A. Monk and Co., Limited, Warrington, for reconstruction of Flint Wharf, Runcorn Docks, has now been completed. The dock wall has been replaced by 40 ft. lengths of steel sheet piling for a distance of 270 ft. and at the same time the crane track has been raised to the level of the adjoining storage ground, involving considerable concreting. The two new discharging berths now available for vessels up to 1,200 tons capacity represent a continuation of the policy of the canal company to modernise Runcorn Docks for the more expeditious handling of pottery materials, fertilisers, chemicals and general cargo. When the Runcorn—Widnes Bridge is completed Runcorn Docks will be easily accessible to Lancashire and the North as is at present the case to places in Cheshire, Staffordshire and the Midlands.

Built in strength

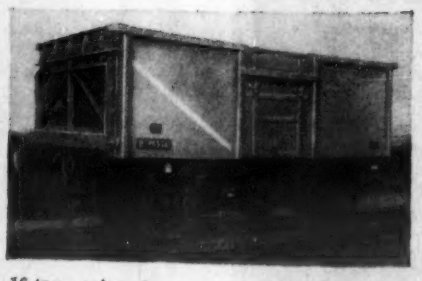
Add to the strength of steel the quality of British craftsmanship. Back it with the manufacturing facilities and experience in steel of one of Britain's greatest engineering organisations and the products will be wagons and rolling stock by Pressed Steel Company Limited for the railways of Britain and the railways of the world.

Latest addition to Pressed Steel Company Limited British Railways production: new 58 ft. gangwayed Standard Brakevan.

A 60,000 RECORD

British Railways have already taken delivery of over 60,000 16-ton all-steel mineral wagons produced in our Paisley works.

20-ton capacity Bulk Grain Van to the order of British Railways.



16-ton mineral wagon to the order of British Railways.

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